# The Builder.

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## *The Housing Problem.*

THE name of the late Mr. Sutton will soon be a household word, rivalling even that of George Peabody. The latter left a sum of 500,000*l.* to be devoted to the erection of wholesome dwellings for the poorer labouring classes; Mr. Sutton has left nearly two millions for the same purpose. Already under the Peabody Trust nearly a million and a half have been expended on land and buildings, and the end is not yet. A fund of this sort, under wise management, increases in value every year. Thanks to the munificence and philanthropy of Mr. Sutton, a new and ampler fund has been started on a career of usefulness. The bequest is not a parochial one, but can be applied to the erection of dwellings in some of the largest provincial towns as well as in London. This is a wise provision on the part of the testator, as the housing problem is as acutely felt and as difficult to solve in the provinces as in the metropolis. There is scarcely a large town or city which has not attempted to do something and which does not feel that more must be done, and the problem is already becoming acute in the smaller towns. We have before us as we write a short but useful Report by Dr. Armstrong, the Medical Officer of Health for Newcastle-upon-Tyne, entitled "Housing of the Working Classes," and containing brief descriptions (and in some cases plans) of tenement dwellings erected by municipal and other authorities in London, Liverpool, Manchester, Edinburgh, and Glasgow. The Report was compiled for the information of the Sanitary Committee of Newcastle, and might have been extended to include Birmingham, Leeds, Southampton, Hull, Nottingham, and many other cities and towns. Throughout the country the problem is forcing itself upon the attention of municipal authorities, and many indeed will be the applications which the trustees of Mr. Sutton's bequest will have to consider.

From whatever standpoint the housing question is considered difficulties present themselves. The *laissez-faire* economist, about whom Carlyle used to wax so wroth, says that the modern method of dealing with the question is entirely mischievous; supply and demand and individual competition will accomplish all that is required, and although it may take a long time, the result will be infinitely better than any which can be attained by interfering with these so-called "laws." Certain it is that the palliation of one evil is often the cause of another. Thus it is quite within the range of possibility that the reduction of rents in subsidised houses may in time lead to a reduction of the wages of the whole class from which the tenants of these houses are drawn, and the last state may therefore be no better than the first. The employer of labour will argue that rates have been increased to provide cheaper and better dwellings for his workpeople, and that it is only fair that the increase in his rates should be counterbalanced by a reduction in wages. Further, the stress of competition among the lowest class of labourers tends always to reduce their earnings to a bare "living wage," and in the long run, therefore, there may be a reduction in wages exactly commensurate with the reduction in rent.

It may, of course, be argued that dwellings for even the poorest can be built to pay, and the evidence of private and public companies may be adduced in support of this view; but, on the other hand, it must be confessed that the rate of interest paid is, as a rule, very low, and that some of these companies, such as that of which Sir Sydney H. Waterlow has been chairman for so many years, are really philanthropic agencies and not money-making concerns. And it is also true that many of the dwellings erected by municipal and county authorities are, from a financial point of view, far from satisfactory. The returns are seldom sufficient to pay the interest and sinking fund, and in many cases there is a large initial loss due to writing down the original cost of the land to what is called "housing value." A private company proceeding on these lines would soon find itself in the bankruptcy court. To a certain extent, therefore, the labouring classes are being provided with houses at less than cost price, the rents being fixed partly according to the cost of the land and buildings, but partly also according to what the tenants are able to pay. Public and private generosity is employed in eking out the insufficient wages earned by the tenants; the sweaters call the tune and the public pays the piper. The housing question thus considered is seen to be merely a part of the still larger labour question.

For these and other reasons many persons are of opinion that public authorities are acting unwisely in erecting buildings of this class. Let them by all means condemn insanitary houses. The owners of the houses have extracted the uttermost farthing of rent, and the onus of keeping the property in sound and wholesome condition rests on them. If they neglect their own interest as well as their duty, let them bear the loss. There is much to be said in favour of this view, but the problem is complicated by leases and other conditions, and especially by the number of small holdings which there may be in a given insanitary area, many of the holdings being so small that it is absolutely impossible to erect new houses on them in accordance with the building regulations of the district. To leave the plots vacant would be a hardship on the owners, and would permanently displace the tenants. It has been suggested that such plots should be pooled together, and sold by auction or otherwise in larger and more convenient areas, and the proceeds divided in some prearranged proportion among the owners. But this makes no provision for the erection of houses in lieu of those pulled down. As a way out of the difficulty the municipal authority sometimes purchases the whole of an insanitary area, and, as has been done at Leeds, sells the land at less than cost price so that houses can be profitably erected thereon by private enterprise. In other cases a few houses here and there in an insanitary area are purchased and demolished, so that the remaining houses may be less crowded and may have more light and air. But many authorities retain the land, and erect upon it blocks of dwellings of a character suited to the locality. Although there is much to be said against municipal authorities becoming landlords, there is also much to be said in favour of this step being taken. The dwellings are likely to be better built and more wholesome than if they are erected by persons whose sole object is to make a good profit, and they will also be kept in better repair. The erection of good buildings in place of insanitary areas reduces the sickness rate,

and thus reduces the amount of hospital accommodation required.

Into the moral aspect of the question we need not enter, although it is one which ought not to be forgotten, and is indeed probably the one which has had most influence in leading men to devote their time or fortunes towards a solution of the problem. Many men, however, have ceased to inquire whether the balance of argument is for or against municipal dwellings; the slums of a city are admittedly a menace to health and a disgrace to civilisation, and the practical man says—Don't talk, but clear them away as quickly as possible and put something better in their place. Probably this is the view of the majority of the persons who have furthered municipal enterprise in regard to the housing problem.

In a paper read before the Association of House Factors and Property Agents in Glasgow, Mr. Peter Fyfe, Chief Sanitary Inspector of that city, deals with some of the common arguments adopted by property-owners against municipal interference. The paper, now issued as a pamphlet, is entitled "Back Lands and their Inhabitants," the term "Back Lands" being applied to houses or tenements erected in courts or areas in the rear of other buildings, which are usually loftier and of slightly better class. The three arguments commonly urged in favour of the retention of "back lands" are, according to Mr. Fyfe, the following:—

"*First.*—They are there, permitted by former laws and former authorities, and as such their owners have vested rights not to be lightly interfered with;

*Second.*—They serve a certain class of the population which, on economic and social grounds, could not be equally served in front lands; and

*Third.*—If they were destroyed, there are no houses in the city or its suburbs of equal size and rents in which their inhabitants could reside."

Mr. Fyfe considers the first argument mainly in regard to the provisions of the Housing of the Working Classes Act, 1890, and shows that the law "hedges an owner round with good weapons of defence." There is really no need to labour this question nowadays; the whole matter can be expressed in a sentence: Property has duties as well as rights, and neglect of the duties involves to some extent a loss of rights.

We may therefore pass on to Mr. Fyfe's reply to the second argument, and here we find some original matter of considerable interest. Under Mr. Fyfe's directions, the female inspectors of Glasgow visited 999 tenements in front properties, and 4,509 in back properties, and ascertained the particulars of rent, wages, and occupation of tenants, &c., in each case. The figures are given in two tables, from one of which the following extract is made; we have, however, inserted a column showing the average weekly earnings per head in the different classes of household:—

It will be observed that the average cubic space in the back tenements is slightly larger than in the front tenements, but that the rents are less. The difference in rent is, however, very trifling, being only 4½d. a week for a single apartment and less than ½d. a week for two apartments. The difference in the earnings in the two classes of tenements is almost equally insignificant. The obvious conclusion is that, "in respect of rentals and earnings, there is little or nothing to choose between them." The figures we have added showing the average earnings per head take us a step further, and prove not only that there is practically no difference between the corresponding tenants in the front and back lands, but that the earnings *per head* in one-apartment tenements are almost identical with those in two apartment tenements. If we apply the same basis of calculation to the rentals of the front tenements, we find that the tenants of the single apartments pay ¾d. a week more *per head* than those who occupy two apartments, and that the weekly rent of two front apartments *per head* is ⅛d. less than that paid for two back apartments. The respectability of the two classes of tenants, as judged by the inspectors, does not present any marked difference, nor does their nationality or religion, and Mr. Fyfe is "driven to the conclusion that, as between the two, there is no well-marked line which divides them either socially or from the point of view of economics," and adds—"Upon this second ground, therefore, I am bound to say there is no argument whatever for the necessity of a continuance of back lands in our city."

Of course, the figures to which we have drawn attention refer to Glasgow, and to a comparatively small portion only of that city, and cannot be regarded as applicable to other cities, where the conditions of labour and the cost of buildings may be vastly different; but they are undoubtedly a valuable contribution to our knowledge of the housing question.

The third argument is restated as follows:—"If the back lands were destroyed, there are no houses in the city of equal size and rents in which their inhabitants could reside." Mr. Fyfe considers this to be the slum-landlord's best argument for being left alone—"he is a public benefactor *until the public build for the labouring classes.*" The words we have italicised show that Mr. Fyfe is strongly of opinion that private enterprise cannot, or will not, cope with the evil, and this is undoubtedly the general opinion.

But municipal interference is rendered exceedingly difficult by the unsatisfactory nature of the Act of 1890. It was pointed out at the time that the Act was vague and did not go far enough, and that the procedure prescribed by it was unnecessarily complicated, and these criticisms are now endorsed by nearly every one who has had practical experience of its working. Some authorities absolutely refuse to put some parts of it into force because of the onerous burdens it lays upon them, and every authority desires that the period for the repayment of loans should be extended. The period of thirty years which is commonly enforced was apparently adopted originally on the ground that each generation should pay for the works carried out by it. We need not argue this question, but two points may be mentioned; *first*, that the average duration of life is now considerably more than thirty years; if we eliminate infants under one or two years of age, the expectation of life is now over fifty years, and it is only reasonable that the time for repayment should be extended accordingly; and *second*, the probable useful life of the buildings may also reasonably be taken into consideration, and no one will deny that, judging from existing buildings, this will in ordinary circumstances far exceed fifty years; at any rate, the land on which the buildings are erected may well be treated more favourably, and the term of repayment extended to eighty or a hundred years.

Much has been done during the last two or three years to educate public opinion on this subject, and it is certainly high time that pressure was brought to bear on the Government to amend the Housing of the Working Classes Acts in the light of recent experience. Public money is now being poured into the pockets of slum landlords by way of compensation, much of which is thoroughly undeserved. Every business man who is worthy of the name writes off the value of his premises every year a certain proportion for depreciation, and thus accumulates out of his profits a fund for repairs and for ultimate loss when the buildings become unfit for use, and if the owners of old houses fail to do the same, they deserve censure rather than pity. The composition of our legislative bodies is such that property-owners need not fear that they will be harshly treated; the burden of the complaint of sanitary reformers is that they are far too leniently dealt with, and that the public as a whole suffers in consequence both in health and pocket.

| — | Total Number of Houses. | Average Cubic Space. | Average Rent per Month. | Average Number of Family. | Average Earnings of Household per week. | Average Weekly Earnings per head. | Respectable Tenants. | Church Attendants. |
|---|---|---|---|---|---|---|---|---|
| | | | s. d. | | s. d. | | Per cent. | Per cent. |
| *Front Lands.* | | | | | | | | |
| 1 Apartment | 682 | 1,210 | 9 9½ | 3·2 | 21 1 | 6 7$\frac{11}{12}$ | 82·5 | 82 |
| 2 Apartments | 317 | 1,893 | 12 1 | 4·3 | 28 9 | 6 8¼ | 88·6 | 86 |
| *Back Lands.* | | | | | | | | |
| 1 Apartment | 2,638 | 1,298 | 8 4½ | 3 | 19 7 | 6 6½ | 76·0 | 59·8 |
| 2 Apartments | 1,871 | 1,978 | 11 11½ | 4·2 | 28 0 | 6 8 | 83·3 | 74·8 |

## NOTES.

**The New Government Offices.**

THE President of the Institute of Architects has, in a letter in the *Times* of Saturday last, added his voice in favour of the employment of an eminent architect to carry out the late Mr. Brydon's building. That he has not done so earlier is of course due not to any lukewarmness in the matter, but to the consciousness that the public in this country are so ready to attribute any demonstration of the kind on the part of the representative body of architects to self-interested motives. Mr. Emerson obviously refers to this stumbling-block in the concluding sentence of his letter:—

"I can unhesitatingly say that the architectural profession are awaiting the action of the Government in this extremely important matter with the greatest interest, coupled with some anxiety, not from the view of possible professional emoluments, but in the highest interests of the art of architecture."

Of the truth of the closing words there can be no doubt; the difficulty is to get the Philistines of our legislature to understand the existence of such a feeling, accustomed

as they are to regard architecture as a matter of no real consequence. The words "some anxiety" are in fact a great deal too mild to express the feeling aroused among architects by the proposal of the Government; "great surprise and indignation" would be a more adequate expression. Mr. Emerson uses the same arguments which have been already used by others, as to the importance of the detailing of an architectural design. Something might be added as to the respect due to the memory of the late architect, whose work certainly ought to be carried out by an architect of the same standing and ability as himself, if full justice is to be done to his intentions.

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**The Widening of Piccadilly.**

The result of an important deputation to the Office of Works of Members of Parliament and others interested in the question of the proposed widening of Piccadilly, last week, is that we have the undertaking of the First Commissioner of Works that nothing shall be done till after the recess of the London County Council, and that if there is not by that time a general consensus of opinion in favour of the scheme, he will feel it his duty to hold back the proposal till there could be an opportunity of further discussion in Parliament. It is satisfactory to find that, at all events, nothing will be done in a hurry. The letter of Mr. Davies, the Chairman of the Improvements Committee of the London County Council, which followed the report of the deputation in last Saturday's *Times*, certainly puts the matter in a rather new light. According to Mr. Davies's statement, this is not a mere scheme to widen a part of Piccadilly between two narrow points; it is one portion of a general scheme for widening the whole of the route eastwards into London, of which Piccadilly forms a portion. The London County Council, he says, obtained powers three years ago for widening Kensington High-street between Church-street and Cumberland-place; they have obtained powers for widening St. George's-place, Knightsbridge, between William-street and Wilton-place; and they have been in communication with the Office of Woods and Forests, who are the freeholders of most of the property on the northern side of Piccadilly between the Circus and Sackville-street, with a view to setting back the northern street line at this point as the leases fall in; but they have not so far succeeded in coming to any arrangement. Mr. Davies's argument therefore is that the widening along the margin of the Green Park is not an isolated improvement, but part of a great general scheme. The obvious commentary lies in the time-honoured stage-retort—"Then why didn't you say so at first?" This is only another example of the mistake that has been made for years in London improvements, of treating each proposed alteration as an isolated matter, instead of considering it as part of a large scheme and in relation to the whole. If the statements now made by the chairman of the Improvements Committee, as to the general and far-reaching nature of the scheme, had been made by the London County Council at the outset, there would probably have been less opposition to the Green Park alteration, and we should at all events have known the meaning of it. We are still of opinion that the part of Piccadilly skirting the Green Park is not the part that wants widening, and that the disadvantages of the alteration would outweigh the advantages; but we willingly admit that Mr. Davies's statement of the case puts it in a rather different light from that in which we at first regarded it.

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**The Prospects of the Building Trade.**

It is to be feared that the prospects of the building and kindred trades are not very bright. Increased taxation causes a diminution of expenditure by individuals and by trading bodies, and this diminution is felt especially in such matters as building; an inconvenient shop is allowed to remain; the new drain system to a country house is postponed; and so on *ad infinitum*. The shrinkage of business appears to be evident in the Board of Trade Labour Returns for July, since we find that in the carpentering and joinery trade the proportion of unemployed is 3 per cent., as against 1·8 last year; in the furnishing trade 3·1 as against 2·6. In the country districts where there are small employers such intelligence as has reached us is to the effect that work is slack. These reports are not so much to be relied on as the figures of the Board of Trade. The coming months will, it is to be feared, be a hard time for many artisans, but history repeats itself, and there has never yet been a prolonged war and increased taxation which did not press heavily on the country.

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**Appeals under the Workmen's Compensation Act.**

Mr. Balfour announced last week that he had no hope of being able to proceed further this Session with the Supreme Court of Judicature Bill. This measure, as we stated when it was introduced into the House of Lords, proposes, among other things, to take away appeals under the Workmen's Compensation Act from the Court of Appeal and to hand them over to a Divisional Court of the King's Bench Division. This proposal is now at an end until next spring, at any rate. Meanwhile, there is visible the extraordinary spectacle of the appeals under this Act having been put on one side and allowed to accumulate by the Court of Appeal under the impression that next sitting, two months distant, they would be heard by a Divisional Court. It is obvious that some means of dealing with these arrears must be arranged, otherwise it will be a public scandal. It would not be difficult for a separate division of the Court of Appeal to be formed next sittings to hear these appeals. The Lord Chancellor, the Lord Chief Justice, the President of the Probate Division and Admiralty Division are all *ex-officio* members of the Court of Appeal. It would, therefore, be quite possible to arrange that such a Court should be constituted early next sittings to dispose of all the appeals under the Workmen's Compensation Act which are ready for hearing. Both employers and employed should bring pressure to bear on the Lord Chancellor to effect this object.

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**The Grammar School, Holt, Co. Norfolk.**

The plans and designs made by Mr. H. Chatfeild Clarke have been adopted for the new school buildings by the governors of the trust, and a tender of 45,980*l.* has been accepted from Mr. G. Riches, of Cromer. The school was founded in 1554 under letters patent granted by Queen Mary to Sir John Gresham, who endowed the foundation with estates and property situated in Norfolk, and in Barbican, Finsbury-place, Fore-street, Whitecross-street, and elsewhere in London. Gresham vested the management of the charity in the Fishmongers' Company, who are the present administrators of the trusts.

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**Park Chapel, Chelsea.**

It is stated that this old chapel is about to be pulled down and rebuilt at a cost of about 7,000*l.* The chapel was originally erected for a congregation of French Protestant refugees. The fabric, since enlarged to a capacity of 1,300 seats, was restored in 1880 under the superintendence of Mr. Sidney Bannister. It contains some stained glass windows by Messrs. Gibbs & Steward; the organ was built by Bevington. Of late years it has been known as "Gordon's chapel," as the late General Gordon sometimes conducted the services there.

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**The Mechanism of the Electric Arc.**

The able paper recently read by Mrs. Ayrton to the Royal Society on "The Mechanism of the Electric Arc" will be welcome to electricians, as it proves that all the main phenomena connected with the burning of the electric arc can be accounted for by the ordinary electrical laws. There is no need to make the supposition that the arc has a negative resistance or that it is the seat of an electromotive force. Mrs. Ayrton has found that the arc consists of three parts—a thin layer of carbon vapour issuing from the end of the positive carbon, a bulb of carbon mist joining it to the negative carbon, and a sheath of burning gases formed by the burning of the mist and the hot ends of the carbons and surrounding both. The flame was found to be practically insulating, so that the important result follows that the current flows through the vapour and mist alone. If we suppose that the resistivity of the vapour is much greater than the mist, then the high temperature of the crater would be explained. The pointed shape of the negative carbon is caused by the tip being protected by mist, and its sides are burned away by radiation from the vapour film. The theoretical explanations of the sudden drop of pressure in getting from the positive carbon to the arc, and also of the sudden drop in pressure when the arc begins to hiss, easily follow. Professor Ayrton, some four years ago, was one of the strongest supporters of the negative resistance theory, which his wife has now proved to be erroneous. Still, even an erroneous theory, when it has some foundation, may be valuable, as it may suggest new experiments and lead to valuable results. For example, the negative resistance theory, now proved to be wrong, led to the discovery of the musical arc and a commercial method of obtaining alternating currents of high frequency from the ordinary direct current mains.

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**The Proposed Mono-Rail Railway.**

The advocates of the new Mono-rail high-speed railway are trying to refer its opponents to the parallel case, as they consider it, of the opposition made to the first railways on the ground that it was dangerous and unhealthy for people to be hurried along at the rate of twenty miles an hour. But are the cases quite parallel? The objectors to the

twenty miles an hour railway were foolish even from the point of view of that day, for they might have reflected that people could ride a galloping horse at that speed without suffering from the effects. But the human body is, after all, a delicate machine, and there must be some limit to the speed of transport which it will endure without ill effects. We do not know how near we have come to the limit, but we know there must be a limit. Then there is also the balance of risks and advantages to be considered. However ingeniously the mono-rail railway may be planned and however carefully constructed, no human means can guard absolutely against the chances of accident from some unforeseen cause; and the consequences of an accident at the rate of speed proposed are fearful to contemplate. Is there any advantage in covering the ground at that speed which balances the risk? That is the point for future mono-rail travellers to consider.

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St. Helen's, Isle of Wight.

In reference to a "Note" in our issue of the 10th inst., touching on the sanitary condition of the Urban District of St. Helen's, Isle of Wight, we have received a letter from the Clerk of the District Council in question, complaining that we have done them an injustice in not mentioning what was stated in Dr. Bulstode's Report, that "the Ryde water will shortly be in use over the whole of the St. Helen's district," and stating that the water main was, at the time of Dr. Bulstode's visit, being laid into the village of St. Helen's, and that many of the houses have since been connected. We are glad to hear it, as experience shows that in many such cases promises of this kind are very much delayed in execution. Our remarks were based on the expert Report to the Local Government Board, which may be taken to be an impartial document written only in the public interest; and it must be observed that in spite of the reference to the intention to lay on water to St. Helen's, the Report included, in a later paragraph, the sentence which we quoted, that much had to be done before the district could be said to be modernised in a sanitary sense; and in the same sentence it is added that "no time should be lost in dispensing with the very unsatisfactory source from which St. Helen's was supplied at the date of my visit. Efforts should be made to close the remaining shallow wells in the district." It is clear from this and from various other sentences which space does not allow us to quote, that the local Government Inspector considered the sanitary condition of the district very unsatisfactory, both in respect of circumstances and administration. Our object in quoting and referring to such Reports is not to cause annoyance to local officials, but to strengthen the hands of the Local Government Board in their contest against unsanitary conditions and slack administration.

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Public Improvements, Sunderland.—At the Town Hall, Sunderland, on the 16th inst., Mr. A. A. G. Malet, Inspector for the Local Government Board, held inquiries into the applications of the Sunderland Corporation for sanction to borrow 20,000*l.* for the purchase of the Victoria Hall and certain lands adjacent thereto, for the renovation and alteration of the hall, and for the erection of additional buildings in connexion therewith; 3,290*l.* for the purpose of electric lighting in certain public streets; and 11,000*l.* for the reconstruction and extension of the public baths in Hendon-road. The Town Clerk (Mr. F. M. Bowey) stated the case in each instance.

## GLASGOW EXHIBITION:

### FURTHER NOTES ON MATERIALS.

Scotch fireclay goods are well represented in the Exhibition. Messrs. Peter & Mark Hurll, of Gartliston and Garnqueen Works, Glenboig, have a general exhibit of fireclay articles on a stall near the end of the Grand Avenue, not far from the Machinery Hall. These are all light brown in colour, with small specks of black; there is a good assortment of tiles, arch-bricks, perforated bricks and slabs. A special feature is a full-size gas retort, as used in the Glasgow Corporation gasworks; it is 9 ft. in length by 21 in. by 15 in. inside. An enormous siege block for a plate-glass furnace shown, has the following dimensions: 5 ft. 2 in. by 3 ft. 3 in. by 14 in. to 12 in. The chemical composition of the Glenboig raw fireclay, as given on this stall, is:—

*Chemical Composition of Glenboig Fireclay.*

| | |
|---|---|
| Silica ... ... ... ... | 56·70 |
| Alumina ... ... ... | 38·52 |
| Oxide of iron ... ... ... | 2·15 |
| Titanic acid ... ... ... | ·76 |
| Lime ... ... ... ... | ·80 |
| Magnesia ... ... ... | ·19 |
| Potash ... ... ... ... | ·41 |
| Soda ... ... ... ... | ·47 |
| | 100·00 |

The above analysis is by Messrs. R. A. Tatlock, Readman, & Thomson. Peculiar features are the small proportions of lime and alkalies, and the presence of titanic acid. The proportion of alumina to silica is much higher than in the majority of fireclays, and this, together with the physical structure of the raw earth, doubtless accounts for much of the excellence of the clay for making refractory goods. A raw sample of clay exhibited shows that the earth is blue-black in colour with a slight suspicion of green; it is exceptionally hard and compact.

Near the last stand is the exhibit of the Gartcraig Fireclay Company, Limited, 18, Charles-street, St. Rollox, Glasgow. It consists of fireclay goods and terra-cotta of light buff colour. A conspicuous part of the exhibit is some fluted column pedestals with vases, of the terra-cotta, which were nicely finished and very carefully burned. Other articles shown are chimney pots, bricks (plain and enamelled), glazed pipes, junctions, and sewer bends. There is also a sample of the raw clay, which is of a grey colour. The walls of this exhibit are lined with white, light and dark green, buff, blue, and deep-brown glazed bricks. We were struck by the remarkably uniform tint of all the goods displayed on this stall.

The Glenboig Union Fireclay Company, Limited, of 48, West Regent-street, Glasgow, have a stand in the same part of the Grand Avenue. It contains a good assortment of the company's well-known fireclay goods and glazed pipes. There are arch-bricks, ordinary fire-bricks, perforated slabs, and the like. All the fireclay goods are buff, speckled. The flooring of the stand is of diagonally-channelled blue paviors, all of good, uniform tint.

The Bourtreehill Coal Company, Fireclay Manufacturers, of Salkeld-street, Glasgow (Messrs. R. B. Stewart & Co.), have a large stall, also in the Grand Avenue, on which is arranged a good exhibit of fireclay goods, pipes, &c., including light buff-coloured vases on square pedestals and white enamelled garden tiles.

The North Devon Clay Company, Limited, in connexion with an exhibit of Messrs. Chubb & Sons' fireproof safes, show samples of "special ⟨M⟩ brand" impervious stoneware bricks, manufactured at the Marland Stoneware brickworks. The bricks are hard, white, and smooth, slightly speckled, and are suitable for strong-rooms, vaults, &c. The samples exhibited are made up as sections of brick walls for strong-rooms.

Messrs. F. R. & C. H. Luke & Co., of West George-street, Glasgow, show, in addition to building stones mentioned in a previous article, red facing bricks made by the Huncoat Brick and Terra-Cotta Company, Limited, of Accrington, as well as panels, moulding bricks, &c. They are all of fine, uniform red tint. We are informed that about two millions of these bricks are being used in connexion with the Granton Gasworks contract, under the Edinburgh Corporation.

There are some samples of blue vitrified Staffordshire goods, such as blue glazed bricks, channels, paviors, and stable bricks, made by Messrs. Peter Wood, Limited, of West Bromwich, Staffs. A chemical analysis of the raw clay employed is given as follows:—

*Chemical Composition of Clay, West Bromwich, Staffs.*

| | |
|---|---|
| Insoluble residue (quartz and felspar) ... ... ... | 33·38 |
| Combined silica ... ... | 27·33 |
| Alumina ... ... ... | 16·73 |
| Ferric oxide ... ... ... | 6·57 |
| Ferrous oxide ... ... ... | 3·38 |
| Manganous oxide ... ... | ·34 |
| Lime ... ... ... ... | ·39 |
| Magnesia ... ... ... | ·86 |
| Potash ... ... ... ... | ·75 |
| Soda ... ... ... .. | 1·06 |
| Combined water, organic matter, and loss ... ... | 9·21 |
| | 100·00 |

The insoluble residue was found to be made up as follows:—

| | |
|---|---|
| Quartz ... ... ... ... | 27·96 |
| Combined silica ... ... | 3·77 |
| Alumina... ... ... ... | 1·07 |
| Lime ... ... ... ... | ·05 |
| Magnesia ... ... ... | ·01 |
| Soda ... ... ... ... | ·52 |
| | 33·38 |

This analysis, by Messrs. Stanger & Blount, is one of the most complete quantitative results on a sample of clay we have ever seen. It enables one to judge at a glance the proportions of combined and uncombined silica as compared with alumina, and it separates the higher and lower iron oxides—very important points, guiding the manufacturer in getting the best results in the burning operations. The proportion of iron is rather high, but acts as a good flux to the silica and alumina; whilst the alkalies, though satisfactorily small in amount, are also to some extent fluxed in the same way. We learn that the bricks are burned at a temperature of about 2,372 deg. Fahr.

In the Machinery Hall several kinds of raw clays and finished bricks, both plain and glazed, are shown in connexion with brick-making machinery by Messrs. Thos. C. Fawcett, Limited, Hunslet-road, Leeds.

In the Irish pavilion there is some fireclay from Ballinamore, co. Leitrim, found in association with black clay. No particulars were forthcoming at the time of our visit.

In addition to the above clay-working exhibits, there are several other stands in different parts of the Exhibition, on which tiles, drain-pipes, &c., in connexion with sanitary goods, are shown; these have already been described (see p. 50 *ante*).

Cements in a raw state are not conspicuous in the Exhibition, and we have nothing to say concerning them, though we saw a few from Canada and elsewhere.

Timber is in evidence in various sections, especially in those devoted to British colonies. With few exceptions, however, they are in the nature of museum specimens, and refer to woods which are, at present, of more interest to botanists than to architects. In the Western Australia section the hard red woods of the country are admirably displayed, principally polished as table tops, balusters, &c., and the various objects are seen to better advantage than they were in the miserable little building at the Paris Exhibition, where rough and worked samples of the woods were also shown, though few were identical with those at Glasgow. Several specimens of Canadian timber are exhibited. The principal woods are the white or Weymouth pine, formerly the principal kind of timber exported from the Dominion; the red pine, a rather resinous variety, and not so much in use as the preceding; the white fir, which does not grow to the same size as the pines, the black fir, red fir, white cedar, aspen, basswood, cypress, and the birch. The annual yield of the forests of Canada is upwards of 33,538,000 standard logs, each having 100 ft. board measure. The total value of the raw products of the forests is over eighty millions of dollars. Rhodesia contributes several interesting varieties of timber in the British South Africa section, which timber will doubtless prove more interesting to British architects as the country becomes more fully developed. There is a large building out in the grounds devoted to the exhibition of Russian timber and general forestry

works. Speaking generally, there is an absence of information in the Exhibition in regard to these extra-British timbers. It is not sufficient for practical purposes to merely give the Latin name and the locality whence the specimens come; that is all they do in most museums. An Exhibition is not a museum, and the visitor ought to be provided with sufficient information regarding specimens, either in connexion with the specimens themselves, or in the official catalogue. The latter, however, is practically a useless publication, except for the block plan of the exhibition it contains, and that would be better were it more detailed and on a larger scale.

## RECENT PROGRESS IN ARCHITECTURAL DESIGN IN THE UNITED STATES.

THE following paper was read by Mr. Walter Cook, F.A.I.A., at the thirty-fourth Annual Convention of the American Institute of Architects, and is printed in the report, which we have just received, of the proceedings of that Convention :—

"Another observation," writes Professor Langford Warren, in his very interesting little essay prefixed to the catalogue of the Boston Architectural Exhibition of 1899—"Another observation which has forced itself upon our attention during the last two or three years, is the marked growth of distinctive local character in the architecture of our principal cities. This may be regarded as decidedly a hopeful sign—a sign of wholesome and natural life and vigour. Chicago, New York, Boston, and Philadelphia, while all have improved, differ from each other in their architecture in a way they did not a few years ago." How true this observation is, I have had many occasions to remark; and any one who has had the opportunity, as most of us have had, to make flying visits to other centres of architectural activity than his own, must have been not only struck by the distinctively local character in the newer buildings of which Professor Warren speaks, but also by the slightly exotic appearance of some of them, which, on investigation, proves to have been conceived in other cities and under other influences than those of their State. It is these differences which make it dangerous for any one who has not been able to study them more carefully than I have, to speak on the progress of architectural design except from a local standpoint; and I must depend on others to correct me when any general conclusions have been unduly affected by the narrowness of my horizon.

In former times, writers on architecture have always endeavoured to explain changes of style from one period to another by referring them to general changes in the civilisation of the countries effected—by modifications in the lives of the people and their modes of thought—or by changes in the materials used or the constructions adopted. These are of course generally gradual although constant in their operation, and only to be seen distinctly when different centuries are compared. For instance, the Gothic development was largely the result of constructional necessities, as the architects of the day understood them, as well as of certain changed conditions in the lives of the people and their history; while the comparatively rapid development of the Renaissance in architecture was entirely coincident with the extraordinary revival and popularisation of Greek and Latin learning and of Classic ideas as they appeared to the Italian mind of that period, and was not all due to any new conditions of materials or structure.

In our recent development it is quite possible to see, even in the course of a very few years, the same kind of influences at work—the changes in the temper, the needs, and the desires of our clients, as well as the changes in the materials used and in the constructions adopted; and as our different cities do not advance on strictly parallel lines in other respects, it is quite natural that this should also be the case in their architecture. The unity of language and political institutions, the constant interchanging of our population will certainly prevent any great radical differences; but such variety as we see existing in Europe between two modern cities has already begun here, and bids fair to become with time more rather than less marked.

Any consideration, however, of the causes of our progress in design would be most incomplete which failed to take account of the direct influence of the architects. The tendency of the historians of our art, more than any other, has been to consider the architect as the more or less unconscious agent in the general forward movement of the world, whose style was an inevitable consequence of some unseen power which urged him on in spite of himself. It is, perhaps, on account of this view that the names of so many of our great masters are quite unknown to the general public and far less known than should be the case even in our own ranks. Whatever the truth may have been in the past—and I am not now pleading the cause of individual genius—it is quite certain that to-day and in our country the style and character of a building often proceeds directly from the individuality, the traditions, and the education of the architect rather than from any general trend of the artistic and intellectual ideas which surround him. Never in our time has this been so true as it is at the present moment, and one is tempted to say that much of the architecture of the present day has been rather imposed upon the community by the architects than imposed upon the architects by the community. For instance, our domestic work in New York has broken radically away from the tradition of the high-stoop brownstone house, and this only because the architects took the initiative of a better plan, and persuaded the client that it was a better one.

All these causes, then, change in the general ideas and conditions, constructive necessities, and the initiative of the architects, are responsible for the recent advance in design. It is to the last-named and to the far better artistic education of the architects of to-day that is due a great and notable improvement in the study of both ensemble and details in most of our recent buildings. Nor is this true only of the work of the better-known men. In a great deal of the work where there is no real architect at all, the better influence is felt to some degree. Even those speculative structures which cast so much unmerited discredit upon us in the mind of the casual visitor to New York, even these are distinctly better than the same buildings were ten or fifteen years ago, and reflect, however dimly, quite unmistakably our real architectural work.

The tall building with its skeleton construction which some of us are fortunate enough to design, and the existence of which nearly all of us deplore, is the result of constructional necessity. Far be it from me to enter here into any discussion as to its future development. In no kind of work are we so much at sea. We try an excess of sincerity and are appalled at the resultant ugliness; we decorate our sincerity first at the bottom, then at the top, then all over, and are still wondering which is the best. We are confronted with the problem of a tower, mostly windows, with two or three blank walls which may be covered up any day by an adjoining building, and are tempted to say with the prayer-book that there is no health in us. Few of us think that an absolutely successful solution has been reached, and yet few buildings are more interesting to study on account of the many earnest and skilful attempts to solve the problem. Look at Mr. Sullivan's buildings, with their strong individuality and local character. One of them stands in New York and shouts tidings of Chicago to us as one preaching in the wilderness, and still we wonder and admire and are unconvinced. Then there is Mr. Reid's building in San Francisco, one of the most successful I know, and Mr. Bruce Price's and Mr. Eidlitz's, and a score of others. But as soon as we begin to talk about them we are involved in such a quantity of theories of all kinds and descriptions that we are apt to forget that after all material conditions are filled there is really only one paramount question—how far are they beautiful? Given the almost impossible conditions of the problem, and it seems to me that there has been a steady progress towards better and more harmonious compositions; and yet—and yet it is impossible to feel certain what is the true path. The temptation to the strange, to the unusual, to the grotesque even, is great; may it be that through much tribulation we may enter into the kingdom?

It is a comfort to turn to our domestic work, in which Americans have so long since achieved a large measure of success. In no field has this success been so well maintained as in our city and country houses, and this is apparent wherever you may go, east or west, in all its varied manifestations. The differences of development in different places is not only very marked, but a constant source of entertainment and interest. I defy the architect from Boston or New York to see without lively pleasure and sense of novelty the work of the group of men who have done so much in Philadelphia for their city and their art; and this is only one example. Wherever we turn we find evidences of increased study, of greater ambition to do the good thing, of greater knowledge of the good traditions, and a more educated if less slavish adherence to them.

"Good Americans," said Dr. Holmes, "when they die, go to Paris." We have to some extent changed this. To-day a great many good Americans, a great many rich Americans, especially, come to New York to live long before they die; and so it has become not only the commercial metropolis of the East, but the abiding place of a large population, partly New Yorkers, partly from other States, who have plenty of money, plenty of leisure, and the chief business of whose life is amusement. In this life of leisure and amusement the house is the greatest element; receptions, dinners, dances, take place there, and it is the visible sign of the wealth, the social position or aspirations, and the tastes of the owner.

This is, I think, why the New York house, that is the most *en évidence*, is the one planned with a special view to entertainments, and why our house architecture seeks to express it outside and inside. It is one of the cases where a change in the ideas and desires of the client has been the greatest influence at work; just as similar changes in ideas were instrumental centuries ago in determining the character of Venice. It is easy to see from this point of view why what is called the American basement plan has been almost universally adopted; for this plan, with all its other advantages, gives the greatest available space to the rooms devoted to entertainment, and yet originally it had to be almost forced upon the conservative clients, who could imagine nothing except the traditional high stoop.

Another thing which has influenced our particular city architecture has been the practical abandonment of the red pressed brick which used to be the conventional standard of respectability and elegance, and for whose disappearance we can hardly be too thankful, and the very general use of light-coloured stone, especially of Indiana limestone, which invites to a greater elaboration of design and detail.

These various determining causes have resulted in a great number of houses which are to me very full of interest. New York is becoming more cheerful, gayer, and brighter in its aspect, and there are more evidences of study and individuality in a single street to-day than in a whole quarter formerly. To those who know the city the neighbourhood of 54th Street, with the imposing building of the University Club as a centre, will serve as an example of what I mean.

It is, however, always useful to see ourselves as others see us, or even as one other sees us, and so, with apologies to Professor Warren, I will quote him once more :—

"In New York," he writes, "the influence of the Ecole des Beaux-Arts is paramount in much of the work, often even to the sacrifice, if not of local, of national character, so that many buildings look as if they had strayed from the Boulevards of Paris. Though we may regret this wholesale importation, this direct imitation, with all its mannerisms, of a style which is full of bad taste and solecism, in spite of the strength in plan and mass of its originators, it does seem to express New York, and it certainly has been acclimatised there and is affecting nearly all its work, while it has received but little welcome in other parts of the country, so that this direct Parisian influence has come to be peculiarly characteristic of New York and may possibly be the starting point of a local manner of building. Lavish display, richness of effect, characterise most of the work and express the luxury-loving New Yorker."

I confess to have read with mingled feelings this blast of doctrine from the precincts of ascetic Boston. Is it true that we have a wholesale importation of style which is "full of bad taste and solecism?" I think Professor Warren has allowed himself to draw too sweeping conclusions. It is a fact that the influence of the Ecole des Beaux-Arts and its pupils has been a strong one. But this influence has been principally felt in the methods of study, and not in the introduction of certain forms, and more powerfully in the study of plan than in any other way. It has done much

to persuade us that there is such a thing as beauty in its arrangement, and not merely convenience—to teach us that there is such a thing as a beautiful plan ; and it is not so very many years ago since the idea that there could be such a thing was ridiculed.

As to the adoption literally of French motives, which Professor Warren characterises so frankly and with so much authority of tone, I think we need not be alarmed. It is rational and eminently proper that the young architect —and most of the Beaux-Arts men have that inestimable advantage—should pretty accurately reflect his teaching (if it has been good for anything) at the beginning of his career. Raphael in his first stage was a close imitator of Perugino. But as he progresses his individuality asserts itself, the changed conditions and surroundings exercise their unconscious influence, and he is himself in spite of it. It may be that the school work is to be the foundation of a special New York architecture ; but it is certain that in that case the results will not be a series of copies.

Whatever may be the case, however, in the future, as yet the influence of the Ecole can hardly be called paramount in New York. McKim, Mead, and White, and their now numerous architectural progeny are not under the baleful spell, as Professor Warren considers it ; Mr. Hardenbergh, Mr. Eidlitz, Mr. Robertson, and a host of others whom it would be too long to catalogue are untouched by the poison. It is a source of strength to us that our architects are divided into a number of separate groups by a process of natural selection, each working in different ways, each influenced unconsciously by the others, but preserving its own individuality. I imagine this to be the case in most of our architectural centres, and I hope it may never happen—I am sure it will never happen, that we shall all serve the same gods in our designs.

Before leaving the city house some mention should be made of the interiors, to which an increased care and study have been given of late, when they have not fallen into the hands of our common enemy, the commercial decorator. The best work which has been done in this field will, it seems to me, compare very favourably with any done in the world at the present time. There is still often too great a desire to conform to some given style ; but the habit of making a house a sort of architectural encyclopædia, with an Empire room, an Elizabethan room, a Colonial room, a Moorish room, is on the wane, I think, and one is more often struck with appropriateness and beauty than with historic parallels.

It is hardly more than twenty-five years ago that we began to design country cottages by the seashore or in the mountains for the city family to spend two or three months in during the summer. At first they were cottages indeed, little more than a more convenient version of the farmhouse which preceded them, and following closely its simple style, with here and there a Norman or an English reminiscence added. As the taste for country life, or, perhaps, rather life in the country, spread, these cottages grew in size and importance year by year till it became quite ridiculous to call them cottages. Still the same traditions were potent, and we saw country houses, manors, châteaux—call them what you will—of great size, masquerading as overgrown cottages, with huge shingled gables, shingled towers, and an attempt at a certain elephantine picturesqueness.

This was the epoch when, Mr. Russell Sturges mournfully tells us, the only real American contribution to architecture was made, and when American architects still designed—the golden age between 1880 and 1890. Now, the *laudator temporis acti* has been a familiar figure ever since Nestor compared the besiegers of Troy to their mighty ancestors ; and we are pretty well accustomed to hearing of the superiority of our father's deeds to our own in all the arts of war and peace. But it is a somewhat novel experience to hear how much better we, ourselves, were ten or fifteen years ago than in our present decrepitude ; and it is worth while questioning whether we have really fallen short of the high standard we ourselves set.

Of course, there are many real country cottages still built, and in many of these Mr. Sturges's ideals are still followed, not less successfully than in the past, I think ; with many interesting experiments in other directions, like Mr. Atterbury's semi-oriental houses on the south shore of Long Island. But the country house of our day is continually assuming greater importance, not only in Newport and in Lenox, but all over the country. It is often a great establishment, rivalling, if not surpassing, in importance the town house, and lived in for half the year instead of a few summer months. For these houses we have drawn our inspiration from those of similar importance in our own and other countries. The large Colonial houses, especially those in the South, have been studied and freely imitated ; England and Italy have furnished us types ; but all of these have been so modified and changed that the result is in no way a literal imitation. We are in a fair way to have a great variety in our stately country places, and I, for one, do not fear they will suffer by comparison with their predecessors. The question of their setting and their surroundings becomes one of great importance, involving, as it does, all the problems of landscape gardening ; and it is most necessary that the general designing of these features should be under the control of the architect, however needful it may be that he should take expert advice in certain details.

In our public buildings a new era has opened, thanks to the intelligent interests and sympathy which we have learned to expect from Secretary Gage, and to the general awakening of interest in good architecture all over the country. It is due to these causes that the custom-houses in New York and Baltimore and other of the more important Government buildings have been put into hands which may well assure us that they will be far in advance of their predecessors, and that the New York Public Library and the State Capitols of Minnesota, Rhode Island, and Washington have become objects of architectural rather than political interest. It is with impatience that the results of this new era will be awaited, for it is as yet too early to draw any general conclusions about tendencies in the matter of style. In the consideration of public buildings, however, it is of interest to note the beginnings of an idea of fixed types. The State capitol is beginning to be understood as a building with a dome ; perhaps following the lead of the National Capitol at Washington. My attention was drawn to this by a criticism I heard of one of the designs submitted in the competition for the Providence Capitol — a non-professional criticism. The design in question had a cupola somewhat like that of the Paris Hôtel-de-Ville, and my critic said quite decidedly that the building didn't look to him like the capitol of a State because there was no dome. I have heard the same thing since, and it would seem as though one feature of our State houses was in a way to be almost taken for granted.

I hardly know of any other instance of a fixed architectural type in this country, except, of course, the ecclesiastical one, which seems to be pretty firmly implanted in spite of some very notable exceptions. As a rule, the moment we turn our faces to the religious problem we become, or try to become, mediæval, and that without much regard to the traditions of the particular sect who are to worship in our temple. In much of this work there are abundant evidences of care and knowledge. The results seem to me generally more successful in the country than in the cities. But these results are so special in their character, so unconnected with the general architectural movement of the day in other fields, that they can hardly be considered with them, but should rather be the subject of a separate paper. In church building we express ourselves in a different architectural language than the one we use every day ; as in the Catholic Church the service is in Latin, and not in a tongue "understanded of the people."

The important buildings recently erected or projected for the University of Pennsylvania, Columbia, Yale, Princeton, and Harvard, as well as those designed for the University of California and Washington University in St. Louis, show quite varying tendencies in our college architecture. Harvard, in the Philip Brooks Building, the University Club and the Architectural Building, returns in a great measure to her own Colonial traditions, and most naturally and wisely. Elsewhere there seem to have been no local traditions powerful enough to influence architectural style. Accordingly at Columbia we find the strong personal note of the architects, dignified, correct, and, notably in the case of the library, imposing. Princeton and the University of Pennsylvania are to be strongly reminiscent of certain of the English colleges, and St. Louis is to follow in their footsteps, while New Haven is to have a memorial hall which will be a total departure from anything there at the present time, and whose materialisation is to be awaited with the utmost interest. In California, where there are no traditions, except those of a population which has ceased to exist, the most important general scheme ever made for a university, the entire realisation of which neither we nor our immediate successors are to see, has been adopted, and is now in process of further study and elaboration by M. Bénard, who has all our best wishes ; and it is indeed an epoch in our architecture when Berkeley and St. Louis both recognise that the random and haphazard arrangement of college buildings which has prevailed in the older colleges is not the ideal way to proceed to-day.

No survey of the current architecture of the time and its tendencies of style can be otherwise than an incomplete sketch, without far exceeding the limits of a paper to be read before you. But I have said enough to show you how hopeful I think the outlook is. It is true that many bad things—things which all of us, wherever we believe the truth lies, recognise as bad—are still built, and that what used to be known as the Peorian style (doubtless with great injustice to that city) is not yet entirely dead. But it is just to look at the best, the most representative buildings, rather than their weaker companions ; and in these I see little that is not encouraging.

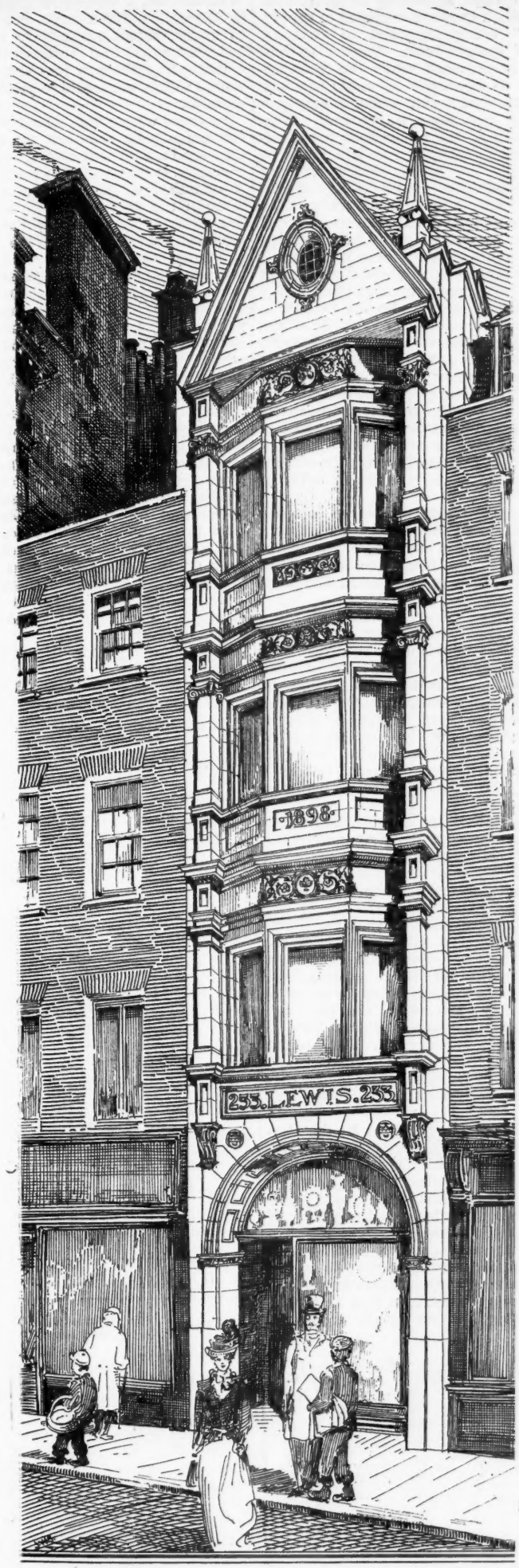
The newer architecture has, it is true, its foundations in a more complete knowledge, a more thorough comprehension of the best that has been and is done in other countries ; but we are too genuine Yankees to be able to imitate blindly, even if we wished to do so ; and I know few examples, if any, where the distinctly indigenous character is not apparent. To those who are impatient for novelty, who demand an American architecture as they used to demand an American novel, who proclaim with alliterative enthusiasm the doctrine of "progress before precedent," I would recall the sentence quoted by Thomas Bailey Aldrich in one of his essays—"Nothing but mediocrity is ever wholly original."

The paths taken by us are widely different, and yet, in a way, they all lead to Rome. We are as far as ever from being of a mind as to which is the only true one, although each of us is privately convinced that he knows it. In these individual convictions and differences lies much of our strength. Like the ship on the shield of the city of Paris, our architectural ship is rocked hither and thither, but never sinks—*Fluctuat nec Mergitur.*

## *ARCHITECTURAL SOCIETIES.*

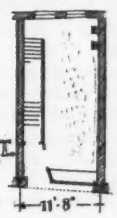
Leeds and Yorkshire Architectural Society.—On the 15th inst. an afternoon visit of this Society was made to Wheatfield Lodge and Castle Grove, Headingley (by permission of Mr. Joseph Nicholson and Mr. John Kirk, J.P.). Wheatfield Lodge, Wood-lane, has undergone alterations and additions from the designs of Mr. Butler Wilson, F.R.I.B.A., who was also responsible for the decoration, furnishing, and upholstering of the following apartments :—The hall, the staircase, the gallery, the dining-room (28 ft. by 21 ft.), billiard-room (35 ft. by 21 ft.), and the stables, where accommodation for six horses and carriages is obtained, with hospital, harness-room, hay-chamber, and the necessary offices. At Castle Grove, Moor-road, Headingley, which was also visited, considerable enlargements have been made under Mr. Butler Wilson, who was also entrusted with the various schemes of decoration, furniture, and upholstery in the salon (31 ft. by 29 ft. by 26 ft. high), the dining-room (32 ft. by 20 ft. by 15 ft. high), the billiard-room (37 ft. by 18 ft.), the drawing-room (36 ft. by 15 ft.), and the staircase hall (16 ft. by 14 ft. by 45 ft. high).

Street Improvements, Lincoln.—On the 16th inst. Colonel A. J. Hepper, D.S.O., R.E., Government Inspector, held an inquiry at the Guildhall, Lincoln, on the subject of the application of the Lincoln City Council to borrow 4,650*l.* for purposes of street improvement. The Corporation was represented by the Deputy Town Clerk (Mr. W. T. Page), and amongst others present were the City Surveyor (Mr. R A MacBrair) and the Electrical Engineer (Mr. Clegg).




A NARROW FRONT IN THE STRAND.

T·BATTERBURY·F·R·I·B·A·ARCHT.




## A NARROW FRONT IN THE STRAND.

WE published elevations and details of this bit of work as a plate in our issue of February 10, 1900, with a short description.

The perspective shows better the effect of the bay. The architect is Mr. T. Batterbury.

## THE BUILDING TRADE AND THE HOUSING QUESTION IN GERMANY.

MR. CONSUL-GENERAL FRANCIS OPPENHEIMER, of Frankfort-on-Main, in a long special Report respecting the commercial set-back which is being experienced by Germany (a set-back which, though it may last some time, he thinks will not become sufficiently acute to terminate in a crisis), explains that in the middle of the nineties, when the general tendency of trade was rising, the rate of interest advanced, and reached in 1899 the abnormal height of 7 and 8 per cent. As at this juncture investments in Government stock proved unprofitable and even insufficient for those who wished to save money, the investors with their ready cash bought industrial values, and even sold Government stock, to effect a change in their investments. Such a step, of course, affected the quotation of Government stock, so that its holders, beyond an insufficient income from this source, experienced an actual loss of capital. In consequence, industrial values continued to increase in favour with the public, and for years so much money was devoted to industrial investments that industry was thereby enabled to extend itself considerably. When all available cash had been swallowed up by the industrial high tide, and loans on account of the increased risk could only be had of professional lenders at a higher premium, the high rate of interest which followed could not long be borne without serious consequences. The building trade was the first to suffer. Granted even that the need for extended accommodation in the towns still prevailed, builders were stopped in their activity by the impossibility of raising mortgages at a rate which would still leave them a margin for profit. This caused the first interruption in the continued industrial development. It affected in the first instance all works connected with the stone, sand, mortar, and cement trades, and further the iron, glass, and wood trades. It also put a stop to the extension and rebuilding of industrial works generally, which had been taken as an outward sign of the firmness of the industrial market, and by which industry had considerably increased the general demand as self-consumer. This first set-back was intensified by the high prices prevailing. They had been fixed during the days of unparalleled prosperity by the syndicates, who seemed most disinclined to grant any reduction. Contracts had been made over prolonged future periods, and consumers were bound to pay high prices in future in spite of the changed circumstances. People well qualified to form an opinion frankly declare that at this moment syndicates failed in practice to bestow all those benefits which for times of trouble had in theory been expected from them, and that their power and consequent influence on the market became for the time being an evil rather than a blessing. The scarcity of dwellings, which of late has become a very serious question throughout Germany, is undoubtedly due in the first instance to the rapid increase of the population and the temptation for peasants during times of industrial prosperity to flock into towns. The demand for dwellings was furthermore increased by the fact that the higher wages earned enabled different families, which had hitherto shared one dwelling, to separate There were local reasons, too, which led to an increased demand. Thus, owing to the compulsory early closing on week-days and the closing of shops altogether on Sundays in many towns, families which had so far been satisfied with inferior accommodation, because the whole day and all days had been spent in the shops, desired better dwellings for their leisure hours. In some towns, again, there has been a decided slackness in the building trade, or a disinclination to build houses and small dwellings, because the excessive price of sites prevented such enterprises from being regarded as lucrative investments. The professional builder, moreover, knows that houses split up into small dwellings are difficult to manage and difficult to sell. This want of accommodation would undoubtedly have been felt even more acutely throughout Germany had not certain classes of the population been "housed" by their employers. Thus the Government has in some towns provided accommodation for those it employs (*e.g.*, for railway officials); some municipalities have supplied accommodation for those employed in municipal works (*e.g.*, gas factories). The proprietors of large factories have long since built workmen's dwellings in connexion with their factories. But even this system, it has been pointed out, is not altogether satisfactory when there exists a real want of small dwellings; for the scarcity of the dwellings certainly enhances the influence the employer can bring to bear upon his employee who is also his tenant. Among the lower classes of the population, no doubt, the artisans are best supplied with accommodation, but there are many of the same financial standing whose wants so far have

been ignored except in the few cases where private generosity has come forward to reduce the calamity. To-day all are agreed that the state of affairs calls for serious general remedies. Some suggest that matters might be considerably improved by an efficient official inspection (and consequent improvement) of the accommodation which already exists; some claim a reform in the building laws with a reduction of the rates and taxes levied upon buildings with small dwellings, whereby such enterprises would hold out the temptation of fair investments; others, again, want a more systematic development of the means of communication, whereby land outside the towns could be usefully acquired for the building of cheap dwellings. One suggestion which enjoys particular favour invites the Town Committees to acquire extended areas, which are to be let to building societies on long leases, with the proviso that the buildings to be created are to supply the much-needed dwellings. This suggestion has become possible only since the introduction of the new Civil Code, which has legalised (since 1900) long leases. Another suggestion goes a step further. The town communities, after acquiring the extended areas, are themselves to build the dwellings, for which reasonable rents would then be assured, as the community need make no profit, and only charge interest on cost and outlay by way of rent. This course, however, though it appears attractive at first sight, would undoubtedly meet with difficulties in municipal administration, and is open to the objection that the community thereby enters into competition with certain owners who pay house taxes, &c. The want of dwellings has, for a number of years, been more particularly felt at Frankfort, where the average annual increase of the population has amounted to about 6,500. Owing to local reasons, it has so far been an absolute impossibility to build the necessary additional accommodation. In the beginning of 1900 the whole community of Frankfort (*i.e.*, Greater Frankfort) covered an area of 8,014 hectares, out of which only 740 hectares were available for building purposes, and these were so split up and divided, and so unfortunately situated, that they were useless as building sites, and the mapping out of new streets was impossible. A Bill, therefore, was laid before the Prussian Diet, and will shortly have the force of law, which for the first time applies to sites in a township the idea of "pooling" which is common in rural districts, where great distances between properties owned by the same person would materially interfere with a cheap working of the soil. All properties in a district are thrown together, and each proprietor receives one continuous block of land, which, after careful calculation, represents the value of the divided old ones he held. By the Bill referred to, "Lex Adickes," so named after the Mayor of Frankfort, the sites are to be "pooled"; the streets are to be drawn out first, and the remainder is to be divided among the former proprietors of the various parts, with—in some cases which call for special compensation—a sum of money added. The measure has been so framed that although in the first instance it is only to apply to Frankfort, its application may be extended to any other town in Prussia if the working of the scheme is found to be practicable.

## *COMPETITIONS.*

CEMETERY CHAPEL, BEXHILL.—The following is the result of the competition for a Cemetery Chapel, Bexhill:—1st premiated design, Mr. W. H. Allon, Bexhill; 2nd premiated design, Messrs. Crickmay & Heath, London; and 3rd premiated design, Mr. F. W. Richardson, London.

# The Student's Column.

## GAS AND GAS FITTINGS.

### 8.—CONSUMER'S METER AND SERVICE PIPES.

CONSUMER'S METER. — The consumer's meter may be of either the "wet" or "dry" description, but the "dry" meter is now almost universally employed. Fig. 13 shows a wet meter in section, and fig. 14 a dry meter. The wet meter is constructed on the same principle as the station meter previously described.

The dry meter has a case of tinned iron divided into compartments by a central partition, and two or more movable diaphragms having flexible leather sides. The gas enters and leaves the compartments alternately through suitable slide valves. The pressure of the gas on the surfaces of the diaphragms causes alternate inflation and collapse of the bellows-like chambers, and, consequently, alternate variations in the area of the inner and outer compartments, and the movements of the diaphragms bring into operation the lever and cranks which actuate the wheelwork of the indicators.

Meters are classed according to the number of "lights" which they are intended to supply, each "light" being supposed to consume 6 cubic feet of gas per hour. Thus a 10-light meter should be provided when the consumption is likely to approach 60 cubic feet per hour, and a 50-light meter when a supply of 300 cubic feet per hour is required. This nominal capacity of the meter does not represent the largest quantity of gas which can be passed through the meter under ordinary pressures, but the meter should not be required to perform more than its nominal duty. The *prepayment meter*, also called the *coin meter* or the *slot meter*, is an ordinary meter having attached to it a box with a slot in it. When a penny, or any other coin for which the meter is provided, is dropped through the slot a certain quantity of gas is allowed to pass to the burners, and when the pennyworth of gas is nearly consumed, the volume of gas passing gradually diminishes until the flow altogether ceases unless another penny is dropped through the slot. The price charged for the gas is greater than when bought by means of an ordinary meter, because the extra cost of the meter has to be considered. About 25 cubic feet of gas are commonly allowed for one penny, but the quantity varies in different districts.

The prepayment meter first came into use about ten years ago, but it at once became very popular, especially in cottages and workmen's tenements, and there are now about 800,000 of them in use in the United Kingdom alone.

A meter is termed "slow" when it registers less than the actual volume of gas passed through it, and "fast" when the recorded consumption is larger than the amount actually passed through it. A meter which registers correctly at a low pressure would register "slow" if the gas were measured under a higher pressure. By the "Sale of Gas Act" of 1859 a meter is passed as correct when it registers not more than 2 per cent. fast or 3 per cent. slow, the slow registration being in favour of the consumer.

In most large towns one or more meter testing offices are provided and maintained by the Local Authority, which also employs competent and impartial inspectors to test any meter which may be sent to the office for the low fees quoted in the Sale of Gas Act.

The following circular, issued from the Guildhall, London, will serve as an example of the facilities commonly afforded to gas consumers for verifying the registration of gas-meters. The privilege of having a meter, or any number of meters, tested at this low rate of charge is not confined to the inhabitants of the City of London, but is open to every one. The circular runs thus:—

"The attention of the inhabitants of the City is called to the facilities for testing gas-meters:—

I. The Testing Office provided by the Corporation is situate at the City Green-yard, Lower Whitecross-street. Office hours 9 to 5.

II. A gas consumer desiring to have his meter tested should first give twenty-four hours' notice thereof to the gas company. If at the expiration of that time the company have not taken the necessary steps to examine and test such meter, the consumer may do so, the party in the wrong paying certain charges.

III. The charge for testing a 2, 3, or 5-light meter is sixpence, and for larger meters as follows:—

| Dry Meters. | | | Wet Meters. | | |
|---|---|---|---|---|---|
| Lights. | s. | d. | Lights. | s. | d. |
| 10 ..... | 1 | 0 | 10 ..... | 1 | 0 |
| 20 ..... | 1 | 0 | 20 ..... | 1 | 0 |
| 30 ..... | 1 | 0 | 30 ..... | 2 | 0 |
| 50 ..... | 2 | 0 | 50 ..... | 2 | 0 |
| 60 ..... | 2 | 0 | 60 ..... | 3 | 0 |
| 80 ..... | 3 | 0 | 80 ..... | 4 | 0 |
| 100 ..... | 3 | 0 | 100 ..... | 5 | 0 |
| 150 ..... | 5 | 0 | 150 ..... | 8 | 0 |
| 200 ..... | 7 | 0 | 200 ..... | 10 | 0 |

IV. Three days are by the Act allowed for testing, but as a rule a meter can be received back the same day.

V. The consumer can, under special circumstances, have his meter tested on his own premises, but extra cost is thereby incurred.

VI. Any further information may be obtained by applying personally at the Testing Office, Lower Whitecross-street."

Similar testing offices are maintained by the London County Council; one being situated in Westminster, a second in Clerkenwell, a third in Shoreditch, and a fourth in Southwark; and so many meters are sent to these places by gas-consumers and meter-makers that, notwithstanding the low fees charged, the meter-testing offices are found to yield a considerable revenue.

In cases where the suspected meter cannot conveniently be removed, the meter inspector may send a standard meter, known to register correctly, to be coupled to the suspected meter. A quantity of gas is then allowed to pass through the two meters in succession, and if the volume registered by the meters is not identical, the registration of the suspected meter is known to be incorrect. This method of testing, however, entails greater expense than when the meter is sent to the testing office.

When appliances which require a large volume of gas, such as gas fires or cookers, are introduced into a building already supplied with gas, the size of the meter in use must be considered. It frequently happens that a meter which has been fixed to supply "ten lights" or ten burners, each consuming 6 cubic feet of gas per hour, is also called upon to pass the gas required for a ring burner and several gas fires. The result is that the supply of gas throughout the whole building becomes unsatisfactory, the gas-flames assume a miserable appearance, the heating appliances emit very little heat, and complaints are made that the gas supplied by the manufacturer is of very poor quality. The advantage gained by the provision of large and well-laid main service and service pipes may be altogether lost through the use of a meter of insufficient delivering capacity.

The following table shows the nominal delivering capacity of meters of various sizes and the diameter of their inlet and outlet pipes:—

*Dry Meters.*

| Meter. | Diameter of inlet and outlet. | Delivering capacity per hour. |
|---|---|---|
| Number of lights. | Inches. | Cubic feet. |
| 2 | ½ | 12 |
| 3 | ½ | 18 |
| 5 | ¾ | 30 |
| 10 | 1 | 60 |
| 15 | 1 | 90 |
| 20 | 1¼ | 120 |
| 30 | 1¼ | 180 |
| 40 | 1½ | 240 |
| 50 | 1½ | 300 |
| 60 | 1¾ | 360 |
| 80 | 2 | 480 |
| 100 | 2 | 600 |
| 120 | 2½ | 720 |
| 150 | 3 | 900 |
| 200 | 3½ | 1,200 |
| 250 | 3½ | 1,500 |
| 300 | 4 | 1,800 |
| 400 | 4 | 2,400 |
| 500 | 5 | 3,000 |
| 600 | 6 | 3,600 |
| 800 | 7 | 4,800 |
| 1,000 | 8 | 6,000 |

Flanged side connexions.

*Wet Meters.*

| Meter. | Diameter of inlet and outlet. | Delivering capacity per hour. |
|---|---|---|
| Number of lights. | Inches. | Cubic feet. |
| 2 | ½ | 12 |
| 3 | ½ | 18 |
| 5 | ¾ | 30 |
| 10 | 1 | 60 |
| 15 | 1 | 90 |
| 20 | 1¼ | 120 |
| 30 | 1¼ | 180 |
| 50 | 1½ | 300 |
| 60 | 1½ | 360 |
| 80 | 2 | 480 |
| 100 | 2½ | 600 |
| 150 | 3 | 900 |

*Position of Meter.*—The meter should be fitted in a place where it will never be exposed to a freezing temperature nor to the direct rays of the sun. Gas when subjected to low temperatures usually deteriorates in illuminating power, and when the meter or service pipe is cooler

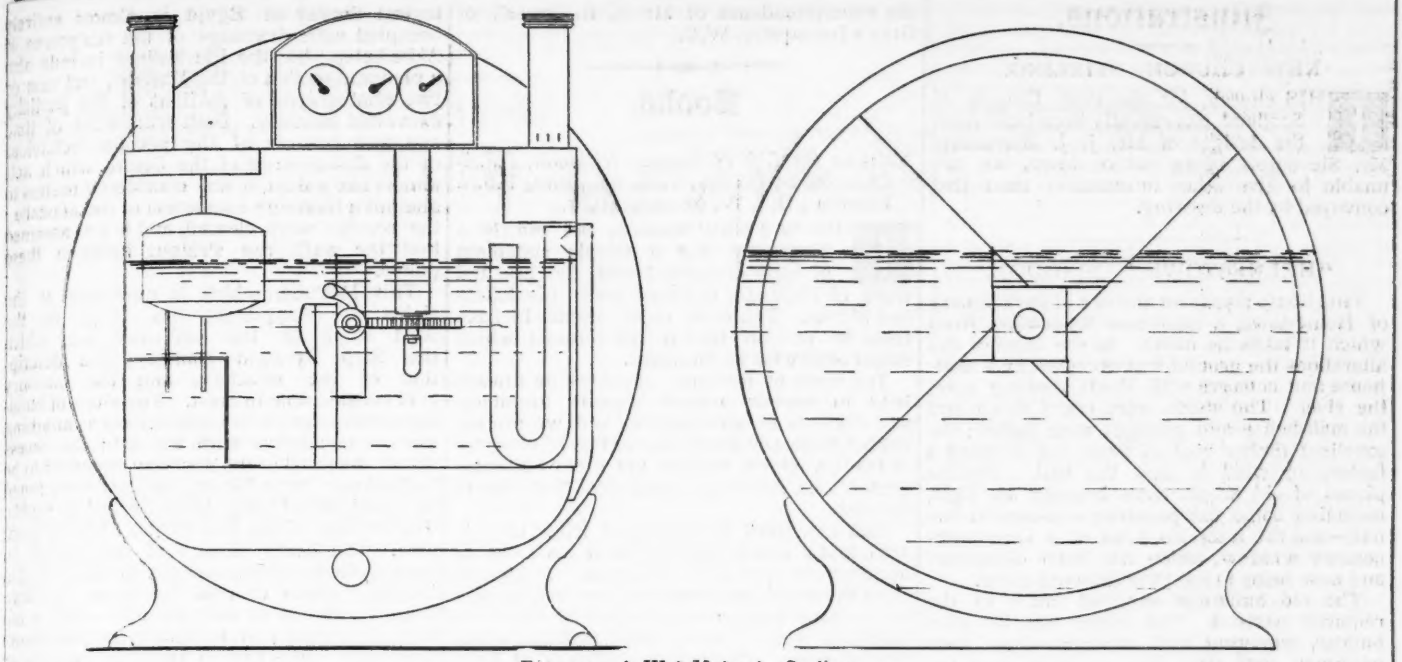


*Fig. 13.—A Wet Meter in Section.*

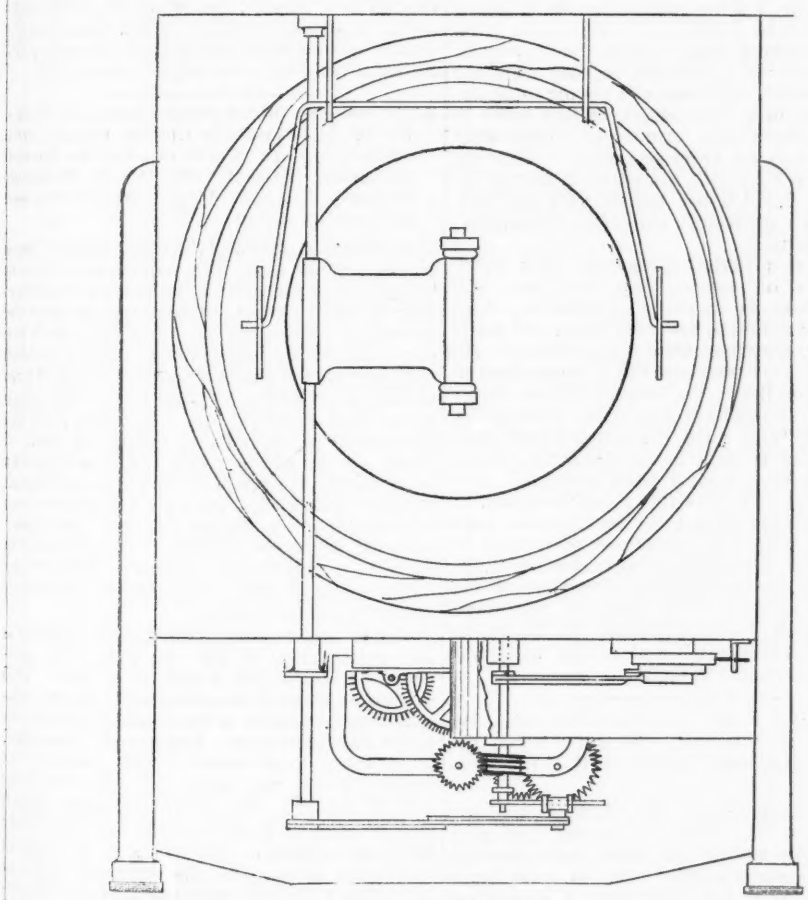


*Fig. 14.—A Dry Meter.*

than the main service pipe, water is liable to be deposited from the gas and to collect in the pipes and cause "jumping" of the gas flames.

In a dry meter the leather of the diaphragms is liable to stiffen and cease to work properly when the meter is subjected to a freezing temperature, while the freezing of the water in a wet meter would at once put the meter out of action.

Gas expands when heated, and contracts when cooled. A thousand cubic feet of gas measured at standard temperature (60 deg. Fahr.) will be registered as more than a thousand cubic feet if the temperature of the meter exceeds 60 deg. Fahr., and less than a thousand cubic feet if the temperature be below 60 deg. Fahr. It would, therefore, be foolish for a consumer to allow his meter to be fixed in a place where the temperature was maintained at, say, 80 deg. Fahr. As a rule, a cellar is the best place in which to place the meter, for in such places the temperature is usually neither very high nor very low, and is more uniform than elsewhere. The meter should be so situated that it can readily be examined at any time, and should be fitted with its base in a level position.

*Service Pipes.*—The pipes which convey the gas from the meter to the point of ignition should be of wrought iron. Composition pipe is often used for small services, but is more liable to damage. Gas pipes should never be buried in plaster, for all pipes should be fitted in such position that they can be examined at any time without undue inconvenience. Gas leakages have repeatedly been caused by nails for picture hanging being driven into composition pipes buried in plastered walls.

Where possible the pipes should be run in suitable recesses in the wall, or along the face of the wall, and if regarded as unsightly may be covered with removable casings of wood or any other material. Pipes fitted under the floor boards should be laid with a view to periodical inspection, and not as though they were to remain in position for all time, and the floor boards over the pipes should be screwed, not nailed. Care should be taken that the bore of every iron tube is examined before being laid down, as occasionally these pipes have internal contractions or blisters which greatly reduce their delivering capacities. Mr. Grafton mentions a case in which a very poor supply of gas was discharged from a service one inch in diameter, and after much trouble it was discovered that the failure of the supply was due solely to the fact that one length of pipe had been used in which the bore was constricted for several inches to about $\frac{5}{16}$ of an inch.

All gas pipes should be laid with a fall or inclination, and be provided with siphon-cocks at convenient points, so that any liquid which may be deposited in the pipes may readily be withdrawn.

The following are the sizes of pipe commonly recommended for supplying a number of burners :—

| Internal diameter of Pipe. | Length of Pipe. | Greatest number of burners at 5 cubic feet each per hour. |
|---|---|---|
| Inches. | Feet. | |
| $\frac{3}{8}$ | 20 | 3 |
| $\frac{1}{2}$ | 30 | 6 |
| $\frac{5}{8}$ | 40 | 12 |
| $\frac{3}{4}$ | 50 | 20 |
| 1 | 70 | 35 |
| $1\frac{1}{4}$ | 100 | 60 |
| $1\frac{1}{2}$ | 150 | 100 |
| 2 | 200 | 200 |

The greater the length the greater the diameter of pipe required to deliver a given volume of gas.

Iron pipes are measured by internal diameter; lead, copper, compo, and brass pipes by outside diameter.

## BOOKS RECEIVED.

DULVERTON AND THE DISTRICT: HOMELAND HANDBOOKS, No. 12. By F. J. Snell, M.A. (Dulverton: E. Bayley. London: The St. Bride Press, Limited, 24, Bride-street, E.C.)

THE SOCIETY OF LANDED ESTATE AGENTS.—This society has been inaugurated, and its principal objects are: (1) To promote and protect the interests of the profession. (2) To advise by mutual conference on all matters of practice relating to the management of landed estates. (3) To disseminate information by means of publications, correspondence, &c. (4) To watch legislation on matters affecting the interests of agriculture and land generally, and (5) to provide a centre in London for members. A Provisional Council has been appointed, and the secretary (*pro tem.*) is Mr. William Broomhall, 16, Cockspur-street, Pall Mall, S.W. Membership is restricted to landed estate agents, their pupils and assistants.

# Illustrations.

## NEW CHURCH, STIRLING.

THIS church, for the Free Church of Scotland, has recently been built from the designs of Mr. J. J. Stevenson. Mr. Stevenson being out of town, we are unable to give other information than that conveyed by the drawing.

## "HELNESTOWE," ABINGDON.

THIS house stands on the site of the nunnery of Helnestowe, a mediæval foundation, from which it takes its name. At the time of the alterations the ground was occupied by a malt-house and cottages with sheds abutting upon the river. The sheds were taken down and the malt-house and cottages were gutted; the excellent timber roof of these last forming a feature in what is now the hall. Various pieces of old work were brought to light, including some oak panelling—re-used in the hall—and the traceried head of a fourteenth-century window, which has been completed and now helps to light the drawing-room.

The old buildings supplied much of the required material. The owner was his own builder, engaging and superintending local workmen, with very frequent visits from the architect. This arrangement has answered admirably, and the work has been extremely well done. HARRY REDFERN.

## "BRYN HAFOD," KETTERING.

THIS house is situated on a hill on the west side of Kettering overlooking the town.

A Leicestershire pressed brick has been used for the facing, with Ketton stone dressings; the roofs are tiled, and the house is lighted throughout by electric light, which is obtained from a private installation.

The contractor was Mr. George Henson, of Wellingborough, the lead lights and casements are by Mr. George Wragge, of Manchester, and the ceilings by Messrs. Shuffrey & Co., of London.

Messrs. Gotch & Saunders, of Kettering, are the architects.

## HOUSE AT PINNER.

THIS house is now in course of erection in the Avenue, Royston Park Estate, Pinner, for Mr. J. H. Shankland. The lower story is of red brick, with arches and quoins of red rubbers; the upper part is finished in white rough cast, and the roof is covered with red Broseley tiles.

Messrs. G. & J. Waterman, of Watford, are the contractors. A. N. PRENTICE.

## WEST HAM CLUB AND RESTAURANT.

THE following extract from the company's prospectus will describe the purpose of this building, which is the first of a series intended to be erected in the district:—

"The company has been formed for the purpose of establishing and conducting in the County Borough of West Ham (and elsewhere should it be so determined) club houses and restaurants, and of providing therein refreshments, sleeping accommodation, amusements, and recreation for the industrial classes. There is nothing of the kind in West Ham. A long-felt need exists for large, well-ventilated, healthy, and attractive rooms, in which dinners and light refreshments can be served at popular prices. Such rooms should be patronised largely by those employed in the numerous factories and works in the immediate locality. West Ham is very inadequately provided with hotel accommodation, and constantly men have to return to the City at night who would remain in Stratford were suitable bedrooms available. There is great need for popular, well-lighted rooms, in which men can meet and read the latest news and discuss the events of the day, as well as for rooms in which billiards, chess, draughts, &c., can be played without the surroundings of the public house. It is proposed to encourage athletic clubs, friendly and other societies, to make the establishment their headquarters, and thus ensure a volume of trade and extend the popularity of the house."

The work is being carried out by Messrs. T. H. Kingerlee & Sons, of Oxford, at a cost of about 12,000*l.*, from the design and under the superintendence of Mr S. B. Russell, of Gray's Inn-square, W.C.

# Books.

*Notes on the Life of Thomas Rickman, F.S.A.* Collected by his son, T. M. RICKMAN, F.S.A. London: G. J. W. Pitman. 1901.

THIS is a small volume, not exactly a biography, but a simple statement of facts connected with the life and work of Rickman, deduced from his letters and diaries. The main object seems to have been to put on record memoranda which might otherwise be forgotten.

The name of Rickman ought to be always held in honour among English architects and students of architecture, and we are indebted to his son for giving us this brief record of his life, which, though not of any literary pretensions, contains a great deal of matter of interest.

Rickman lived in Liverpool from 1807 to 1821, and it was in that town that his taste for architecture was first developed. It appears from the notes that some churches in Liverpool which have been now and again attributed to Rickman were in reality only modified under his influence. The parish church of St. Luke (the one which it was recently proposed to pull down to make a site for the Liverpool cathedral) has been ascribed to him, but the only mention of it here seems to show that it was designed by Foster, of Liverpool, and that Rickman, having been shown the drawings, observed that "though beautiful, they were not entirely correct," and suggested some improvements. He may, however, have had more to do with it afterwards. Among his memoranda at this time is an entry recording his having gone to see Fawcett's Foundry illuminated by gas lights, "which are indeed very brilliant, and promise apparently extensive usefulness." This was in 1809.

During this period Rickman took every opportunity of visiting old buildings and drawing them as carefully as possible. "He sketched in pencil in his note-books, and made Indian ink drawings from his sketches." He records in 1811 making the acquaintance at Doncaster of Blore, "a very intelligent clever man" who showed him many fine sketches he had made, "and gave me some intelligence with respect to some Saxon buildings, which is different from what I have heard of." For "Saxon" we may no doubt read "Norman."

The buildings carried out by Rickman were very numerous, and many are mentioned in the memoir. As a kind of appendix Mr. T. M. Rickman gives a descriptive analysis of the successive editions of his father's great work "An Attempt to Discriminate the Styles of English Architecture," and of the variations and additions made in them.

*The Art and Craft of Garden-making.* By THOMAS H. MAWSON. Second edition, revised and enlarged. London: B. T. Batsford. 1901.

WE may congratulate Mr. Mawson and his publisher on the fact that a second edition of his charming and at the same time practical work on garden-making has so soon been called for. It is not often that a somewhat costly book of this kind reaches a second edition in the short space of six months.

Mr. Mawson's preface to the second edition, in which he to some extent reviews his reviewers, and comments on the great variety and incompatibility of the recommendations that he has received, is good reading, and he makes an important point at the close, in commenting on the fact that "one style of house, which might grace the flat half-timbered districts of Cheshire and Shropshire, is propagated everywhere," and one cut-and-dried garden plan is applied alike in the country and in the suburbs, regardless of both house and site. This is the fact; fashion influences the style of both houses and gardens far too much, regardless of circumstances; and on this account the author may well be excused for, as he says, falling back upon first principles.

*Archæological Survey of Egypt.* Ninth Memoir: The Mastaba of Ptahhetep and Akhethetep at Saqquâreh. Part II. By N. de G. DAVIES. London: Kegan Paul & Co. and B. Quaritch. 1901.

THIS number of the publications of the Archæological Survey of Egypt is almost entirely occupied with drawings of the sculptures of Akhethetep; but the illustrations include also a plan and section of the Mastaba, and one or two photographs of portions of the partially excavated masonry. Both from want of time and also because of the peculiar behaviour of the drifted sand of the desert, which acts almost like a fluid, it was considered useless to attempt a thorough excavation of the Mastaba; the corners were cleared, and it was assumed that the walls ran straight between these points.

This Mastaba, which is now one of the sights of Saqquâreh, lies close to the west slope of the eminence on which the Step Pyramid stands. The description of the structure, and the masonry is of considerable interest. The vices of building seem, after all, to be as ancient as anything else in connexion with the art; the recess above the lintel of the doorway appeared to be built of very large blocks, but they were found to be only thin facing stones, backed by rubble. The interior of the hall is in a state of great ruin. The heavy stone roof was carried on roughly-hewn architraves, ten to eleven feet in length, "which crossed the room in three spans by the aid of four pillars." This is not very clearly put; a reference to the plan shows that there were two of these architraves or stone beams running the long way of the apartment, each partly resting on two squared columns. The total length of the hall is figured as 27 ft. 5 in., the width is a little over 20 ft. The hall is built of white stone, but the surface of the walls and pillars is rough; the pillars merely have the angles chamfered.

*The Egypt Exploration Fund.* Diospolis Parva. By W. M. FLINDERS PETRIE (special extra publication). *The Royal Tombs of the Earliest Dynasties.* Part II. By W. M. FLINDERS PETRIE. London: Kegan Paul & Co. and B. Quaritch. 1901.

THE principal object of the first-named of these books is to illustrate the sequence of historic periods by examples of the pottery characteristic of each period. There are an immense collection of illustrations of pottery with the supposed dates or approximate dates appended to them; also of a considerable number of prehistoric flints and ivory combs, &c. The stone vases from Abadiyeh are interesting from the refinement of curved line shown on some of them. Some of the archaic decorated pottery is of interest in respect of the forms and means of decoration used. We have also illustrations of alabaster vases, copper mirrors, and copper weapons and tools, the latter ranging from the sixth to the eighteenth dynasty. The volume is full of information valuable to students of Early Egyptian history.

The second volume named in the heading is the continuation of the one previously published on the Royal tombs of Abydos. This volume is entirely occupied with the description and illustration of the multifarious objects found in these tombs. The objects illustrated, including a great many of the "sealings" of various kings, are more of historical than artistic interest: the vases of quartz crystal and of porphyry and syenite for their finely designed outlines. The plans of the various tombs are given, with the numerous rows of subsidiary chambers which surround or accompany the principal chamber. The illustrations to the volume are the result of an immense amount of patient and learned labour.

*The Management of Engineering Workshops.* A course of six lectures by ARTHUR H. BARKER, Wh.Sc., B.A., B.Sc. The Institution of Junior Engineers, Westminster. 1901.

EVERY ONE who is interested, directly or indirectly, in any industrial establishment will be quite prepared to admit the necessity for a carefully-designed system of work. So far as the experience of competent judges extends, German and American manufacturers are at present at an advantage as compared with the same class in this country. No doubt many of our old-established works have recently been thoroughly reorganised, and numerous new works have been built and equipped on the most approved lines, but in the great majority of our commercial establishments there is considerable room for improvement in respect of systematisation. Some excellent modern treatises on this vital matter are already before the public, but in our opinion none of them are likely to prove of greater value than the

volume now issued by the Institution of Junior Engineers. The lecturer shows practical knowledge of his subject and a clear perception of the difficulties attending the realisation of theories involved therein. One especially useful feature in connexion with the series now published is to be found in the discussion reported at the conclusion of each lecture. Those taking part in comments upon the views of the author were evidently qualified to speak from personal experience, and their remarks tend to throw light on various important and controversial points. It must, of course, be understood that no treatise or course of instruction can possibly apply to all the requirements of any individual workshop. Every manager must work out his own salvation, but he will be able to derive many valuable hints and to instruct himself upon the general conditions for observance by a perusal of the volume to which this notice refers.

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*Surveying and Levelling Instruments.* By WILLIAM FORD STANLEY. Third Edition. London: E. & F. N. Spon. 1901.

IN the present edition of Mr. Stanley's useful treatise, various suggestions from surveyors and civil engineers are incorporated, and those chapters dealing with constructional details have been revised to accord with modern methods of manufacture. In the last-mentioned respect there are noticeable advances. For instance, the perfection of modern machinery renders it possible to form many parts of surveying instruments from the solid instead of attaching together sundry separate parts. Thus accuracy, strength, and lightness are more readily secured, and the quality of lightness is further aided by the use of aluminium alloys. The general scope and arrangement of the treatise are the same as in former editions which have received attention in our columns, but many new instruments are now described for the first time. Amongst such may be specially mentioned the author's new model theodolite with mechanical tribrach stage, his special transit theodolite for railway work, and a gradiometer patented by him providing means of extending and fixing a scale of gradients by an open reading upon a divided helix. As may be naturally expected, the instruments designed by the author, or made by his firm from the designs of various engineers, receive more ample notice than those produced by other makers, but it should be observed that Mr. Stanley is always ready to speak in approving terms of any developments having real value. His book omits mention of some instruments and methods of work favoured by engineers whose experience has been largely gained in India and the colonies, but as an intelligent record of the appliances in more general use it possesses a distinct value.

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*Hydraulic and other Tables for Purposes of Sewerage and Water-Supply.* By THOMAS HENNELL, M.Inst.C.E. Second Edition. London: E. & F. N. Spon. 1901.

MANY engineers adopt the practice of calculating tables to suit their own requirements, and some of them are induced to make these public, believing that other engineers may find such data useful. As the previous edition of the work to which we now refer made its appearance some eighteen years ago, it is to be feared that a great many other engineers have been relying upon their own tables, or have preferred to employ direct calculations, or again, that they may have possessed themselves of some other of the numerous works of the same kind available. Yet Mr. Hennell's book contains much useful information in a very handy form. The tables relating to the flow of water in various conduits are calculated by Eytelwein's formula, an equation that labours under the drawback of giving results too high for small pipes and too low for larger pipes and channels. Some of the tables, therefore, require qualification by percentages suggested by the author in an explanatory chapter, and we are not sure that this is a convenient arrangement because there is some risk of the necessary corrections being overlooked. Some useful tables relating to rainfall and water analysis have been thoroughly revised and brought up to date, and a table, which ought to be of value to those requiring approximate information, is one showing the dimensions of reservoirs, filter-beds, main pipes, and machinery, for the supply of given populations.

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*Die Englische Baukunst der Gegenwart.* Von HERRMANN MUTHESIUS. Lieferung I. Leipzig und Berlin: Cosmos, Verlag für Kunst und Wissenschaft.

THE author of this work, as many of our readers are probably aware, is the architectural *attaché* to the German Embassy in London. This is the first volume of a work in which he is undertaking the task of illustrating modern English architecture for the German public. The book, in large folio form, consists of German text interspersed with a number of plans and sketches, and a collection of finely executed plates of English buildings.

Among the buildings selected for special illustration are Mr. Norman Shaw's well-known insurance offices at the corner of St. James's-street; Mr. Mountford's Northampton Institute; the Imperial Institute; and, among smaller buildings, a house by Mr. Norman Shaw in Queen's-gate, and Messrs. Bechstein's front in Wigmore-street. The publication, if continued on the same lines, seems likely to give a fair and comprehensive representation of contemporary English architecture. It will give German architects who do not know this country an idea of a modern architecture less eccentric and startling than their own, but not with less variety, and (we humbly hope) in a good deal better and purer taste.

# Correspondence.

*To the Editor of* THE BUILDER.

## GALVANISED ROOFS.

SIR,—Can any of your readers advise as to the best method of treating a galvanised roof to prevent rust? Is paint any good? If the colour could be white (for coolness), so much the better.

JOHN CLARK, LTD.

## VERANDAHS.

SIR,—In your issue of August 10 you speak of verandahs being "objectionable and now seldom seen." Permit me to say that in Bournemouth, where the fresh air treatment of consumptives is much practised, verandahs are coming greatly into use. Unfortunately they are often not wide enough to sit comfortably in.

C. F. M.

# *OBITUARY.*

MR. HUTTON.—We regret to learn that Mr. James Hutton, of Dundee, has been accidentally drowned whilst bathing. He was a member of the Dundee Institute of Architecture. He prepared the plans and designs for St. John's Free Church, Dundee.

# *GENERAL BUILDING NEWS.*

WESLEYAN CHURCH, ROWLANDS GILL, DURHAM.—The foundation-stones of a new Wesleyan church, to be erected at Strathmore-road, Rowlands Gill, were laid on the 5th inst. The structure, which is estimated to cost about 2,600*l*., will provide accommodation for between four and five hundred persons. It is to be a stone building, and will include a couple of vestries and one classroom, together with a caretaker's house at the south side. Messrs. Turner Bros., Gateshead, are the contractors, the architect being Mr. F. R. N. Haswell, of North Shields.

NEW CHURCH, LOSSIEMOUTH.—St. Gerardine Church, erected in connexion with the Established Church of Drainie, was opened recently by Professor Cooper, Glasgow. The church is on the Coulard Hill, and has been built from plans by Mr. Burnett, architect, Glasgow. Accommodation is provided for over 500 worshippers, and the total cost is about 4,000*l*.

PRIMITIVE METHODIST CHURCH, GNOSALL, STAFFORDSHIRE.—The foundation and memorial stones of a new Primitive Methodist church at Gnosall were laid recently. Messrs. Hickton & Farmer, of Walsall, are the architects. The new church will be in the Renaissance style, and will be built of Ruabon dressed bricks and Monk's Park stone. The front façade will be flanked with octagonal turrets, with stone dressings. Sitting accommodation will be provided for about 150 worshippers, the seats being of pitch-pine. A schoolroom will be erected at the rear of the church, and it will be so built as to be utilised as part of the church on special occasions. The contract for the new building has been given to Mr. Whittingham, of Newport.

ST. MATTHEW'S CHURCH, DUNDEE.—The alterations upon and additions to St. Matthew's Parish Church in Ferry-road have now been so far completed that the church has been opened for public worship. The cost of the improvements, including the new organ, will amount to upwards of 1,000*l*. Messrs. Johnston & Baxter were the architects for the renovations, and the contractors for the various departments of the work were:—Mason, R. Sheach, jun.; joiners, Charles Smith & Son; painters, P. & A. Davie; plumber, David Brown; plasterer, Alexander M'Ritchie; slater, David Hutchison.

CHURCH, DUNMORE, WATERFORD.—Dunmore East Church, Diocese of Waterford, was reopened recently, after being closed nearly four months for restoration and rebuilding of the roof on the nave. The architect was Mr. Fogarty, and the builder, Mr. G. Nolan, of Waterford.

CHURCH, CASHEL, CONNEMARA.—The Church of St. James, Cashel, Connemara, was recently dedicated. The building, the architect of which was Mr. T. J. Hamilton, of Galway, is capable of accommodating some 500 people. The High Altar is composed of marble and coloured Irish marble, with inlays of rich colouring. The bottom base is moulded, the centre panel under the altar table being carved in bold relief, the chalice, surrounded by vine and grapes, standing out conspicuously, with adoring angels on either side. It was designed by Mr. C. J. Taylor, C.E., architect, Dublin, the sculpture work being executed by Messrs. B. J. Taylor & Sons, Dublin.

WESLEYAN CHAPEL, ALLENHEADS, NORTHUMBERLAND.—The new Wesleyan chapel and school erected on a site, presented by Mr. W. C. B. Beaumont, M.P., at Ropehaugh, Allenheads, was opened recently. It has seating accommodation for 250. The architect was Mr. John Ridley, of Allenheads, and the contractors were:—Mason work, Mr. John Glendinning, Allendale Town; joiner's, painter's, and glazing work, Mr. George Race, Eastgate, Weardal; slating, Mr. John Hewitson, Newcastle; and hot-water heating, Messrs. Dinning & Cooke, Newcastle.

CATHOLIC CHURCH, WARRINGTON.—On the 11th inst. the foundation-stone of a new Roman Catholic church in St. Mary-street, Latchford, Warrington, was laid by the Bishop of Shrewsbury. The architect is Mr. Robert Curran, and the builder is Mr. Peter M'Lachlan, of Birkenhead. The new church will be capable of accommodating 600 persons, and will be of Transitional Gothic design, built of Yorkshire stone, with red stone dressings. The length of the interior will be 124 ft. and the width 48 ft., while the height of the clearstory will be 45 ft. The total height of the tower and spire will be 130 ft. The principal entrance will be from St. Mary-street, and there will be one from Clifton-street. There will be a nave and two aisles, with six granite columns on each side of the nave, resting upon a Yorkshire stone base, a large sanctuary, with altar, &c., two side chapels, and vestries, &c. Entrance from the presbytery will be obtained through the cloister leading into the vestries. There will be an organ gallery and choir accommodation over the main entrance. The cost will be 6,000*l*.

RESTORATION OF THE LADY CHAPEL, ST. DAVID'S CATHEDRAL.—The restoration of the Lady Chapel, together with the ante-chapel, at the east end of St. David's Cathedral is now practically completed. The work, which has cost over 2,500*l*., has been carried out by Mr. William Thomas, of Haverfordwest, according to the plans of the architect, Mr. J. Oldrid Scott, of London. During the progress of the work an ancient carving was discovered in the floor. It has been placed in Bishop Vaughan's chapel, with a number of ancient crosses. On the exterior, and above the window at the east end of the Lady Chapel, is a statue of the Virgin and Child, by Mr. Bridgeman, of Lichfield.

NEW CHURCH, ABERDEEN.—The new United Free Church at Ruthrieston, Aberdeen, is nearly completed, and will be opened on the 4th prox. The buildings, which are of grey granite, front Broomhill-road and Station-road. There is a tower, with angle buttresses and spire, rising above the main edifice. In a transept gable is a richly-traceried five-light window. The ceiling of the church is entirely of pitch-pine, and is Gothic in form, with moulded principals at intervals and moulded ribs intervening. The whole of the windows are filled in with leadwork and tinted glass. The present church (behind the new church), when vacated, will be used as a hall for the congregation. The church is seated for 550, and the estimated cost was 3,600*l*. Messrs. Brown & Watt, Aberdeen, are the architects, and the contractors were:—Mason, Wm. Murray; carpenter, Jas. Farquhar; slater, Alex. Law; plasterers, A. Ross & Son; plumber, James T. Ross; and painters, John Mason & Son—all of Aberdeen.

CHAPEL, ETCHINGHAM, SUSSEX.—Plans of a new Wesleyan church for Etchingham have been prepared by Mr. A. R. B. Smith, and the contract of Messrs. Ellis & Son has been accepted. The plans provide for a structure with a frontage to the road and with accommodation for 150 worshippers.

CHURCH, SWINTON, YORKS.—On the 15th inst. the Archbishop of York consecrated a new mission church which has been erected at what is known as the Bridge end of Swinton. The new building is Early English in style, and is not yet completed. The finished portion consists of chancel and part of the nave, providing seating accommodation for about 200 persons. Underneath the chancel there

is a parish-room, which will seat about seventy or eighty people. Local stone has been used in the construction of the building, and the roof is of pitch-pine and open timber. The cost is about 2,300*l.* When the scheme has been completely carried out it is expected that accommodation will be found for about 450 persons. The architect is Mr. J. D. Webster, of Sheffield, and the work has been carried out under the superintendence of his son, Mr. J. Douglas Webster. The contractors are Messrs. Geo. Longden & Son, of Sheffield, whose acting foreman has been Mr. James Bussey.

SCHOOLS, SOUTH SHIELDS.—On the 12th inst. the new school buildings which have been erected by the South Shields School Board in Mortimer-road were opened by Mr. W. S. Robson, K.C., M.P. The school has been designed as a mixed school for seniors and juniors, and will accommodate 1,160 children in eight classrooms, and a central hall on the ground floor for juniors, and eight classrooms and central hall on the first floor for seniors; and on the second floor there are a gymnasium, joiner's shop, and cookery classroom. There are four cloak-rooms, two on each floor for boys and girls respectively, the head master's and mistress's rooms being on the mezzanine floor between the cloakrooms, and entered from a private corridor leading from the main staircase. The school has been built of brick, and faced with Lowry's Penshaw bricks, with red Carlisle stone dressings. Internally the school is plastered, with the exception of the dadoes and the whole of the staircases, which are faced with brown salt-glazed bricks. The whole of the work has been carried out from the designs and under the superintendence of Mr. J. Wardle Donald, of South Shields, who also designed the infants' school. Mr. L. R. Todd was the clerk of works.

CATHOLIC SCHOOL, ABERDEEN.—The new elementary Roman Catholic School, Summer-street, Aberdeen, was opened on the 15th inst. There are four classrooms, each 26 ft. in length by 25 ft. broad, and 14 ft. high, capable of accommodating 60 pupils, or 240 in all. Besides these rooms there is a gymnasium on the ground floor, 52 ft. by 26 ft. 6 in. The school is built to accommodate 267 children. Mr. R. G. Wilson, Aberdeen, was architect, and the contractors were: Mason, W. Farquharson; carpenter, J. Henderson; slater, G. Davidson; plasterer, Jas. Simpson; plumbers, Thom & Strachan; painters, J. Garvie & Sons; heating apparatus, Robert Tindal, all of Aberdeen.

NEW SCHOOL NEAR ABERDEEN.—The new school provided for Raemoir by Banchory School Board has been finished. The building, which is of red granite from Hill of Fare, contains eighty school places, and cost upwards of 1,000*l.* The architects are Messrs. Brown & Watt, Aberdeen.

BOARD SCHOOL, MILLBRIDGE, YORKSHIRE.—The formal opening of the new Upper Board school, erected by the Liversedge School Board at Millbridge, took place recently. The school, which has been erected in a new road opposite the Heckmondwike Gas Company's offices, has been built to the plans and designs of Mr. A. E. Rhodes, Heckmondwike. The ground-floor contains a central hall, six classrooms, lecture-hall, and chemical laboratory, with teachers' room and lavatories at the entrance. In the basement there are covered playgrounds at each side of the school, with a kitchen for cookery, and a joiner's shop. The contractors have been as follows:—Masonry, G. Horsfall & Sons, Liversedge; joiners, Milnes Bros., Heckmondwike; slater, J. Roberts, Cleckheaton; plasterers, Parkinson Brothers, Heckmondwike; plumbers, glaziers, and hot-water fitters, E. Walker & Co., Heckmondwike; painter, Fred Akers, Hightown; ventilators, E. Bedford & Co, Halifax; blacksmith, J. Hirst, Hightown; wood-flooring, Nightingale & Co., Grimsby; concreting and asphalting, J. Roberts, Batley.

CATHOLIC BLIND SCHOOL, WEST DERBY, NEAR LIVERPOOL.—New blind schools have been erected on the Rice House Estate at Yew Tree-lane, West Derby, by the Liverpool Catholic Blind Asylum. The new schools provide for children of school age from the hitherto overcrowded institution in Brunswick-road. The building accommodates between sixty and seventy children, but the kitchen department is of sufficient size to provide for double that number. Being intended for the blind, the aim has been to avoid staircases as much as possible, so the building extends over a considerable plot of land, a large portion being only one story high. The building is of ordinary bricks, relieved by red brickwork and stone. The inside joinery is of yellow pine, stained green and varnished. The main corridors have tiled floors and tiled dados. The main entrance, approached by a broad drive, is placed in the centre of the principal building, and gives access to an entrance hall and central staircase, and, running right and left, to the main corridor, which is the chief feature of the building. On the left of the main entrance are two reception-rooms, clothesroom, sisters' rooms, kitchens, laundry, and children's dining-room, half of which is at present used as a temporary chapel. On the right are the children's dayrooms and schoolroom. The upper floor provides four dormitories, each for sixteen children, sisters' rooms, lavatories, and bathrooms, and a small infirmary for six beds. Storage room is supplied in an attic floor in the roof. Messrs. Sinnott, Sinnott, & Powell, of Liverpool, were the architects, and Mr. Michael Fogarty, of Liverpool, the contractor.

SCHOOLS, WHITEHAVEN.—A voluntary school, built at the expense of Miss Crosthwaite on a site given by the Earl of Lonsdale, was opened at Whitehaven last week by the Lord Bishop of Carlisle. The cost has been about 5,500*l.* The architects were Messrs. Oliver & Dodgshun, of Carlisle and Leeds.

NEW ART GALLERY, NEWCASTLE-ON-TYNE.—The foundation-stone has just been laid of the new Art Gallery, which Mr. Alexander Laing is to have erected in Higham-place, Newcastle. The site has been provided by the Newcastle Corporation, whilst Mr. Laing will, on completion of the structure—which is estimated to cost 20,000*l.*—hand it over to the municipality. The site adjoins the Free Library. Messrs. Cackett & Burns are the architects. The buildings will be two stories in height, forming on plan a hollow square, the ground floor consisting of large entrance and sculpture hall, and three art or museum galleries, extending through behind the public library, and lighted from the central court, the upper floor being entirely taken up with top-lighted art galleries, four in number, averaging in size about 65 ft. by 27 ft. by 27 ft. high to the top of the arched ceiling. The main façade is to Higham-place; the corner formed with the Free Library at the south-east angle is occupied by a tower 23 ft. square and 112 ft. high, which contains the grand staircase. The staircase is reached from the sculpture hall, the main entrance to which is about the centre of the Higham-place front. The whole of the floors throughout are constructed of concrete—in the case of the upper floors, combined with expanded metal on steel joists. The surface of the floor to the entrance hall is of tesselated marble pavement, and that of the galleries polished oak blocks. At the north end of the buildings are provided receiving-rooms, private staircase, and picture hoist. The design externally, carried out in polished ashlar, is Renaissance in style, the ground floor forming a rusticated plinth the same height as that of the Free Library, and upon which are detached Ionic columns projecting out on either flank, and carrying the entablature with semicircular arched pediment, under which are sculptured niches. The general height is about equal to that of the library. The main entrance is 8 ft. wide, flanked by double detached Doric columns, with pedimented entablature, and with sculptured figures on either side. Over the arch of the doorway is formed a niche with moulded architrave and twisted shafts on either side. The tower has a deep band of sculpture on the exposed faces immediately under the lantern, the latter being octagonal on plan, and supporting a stone dome about 20 ft. diameter. The system of heating and ventilation is the plenum.—*Newcastle Leader.*

NURSES' HOME, SCARBOROUGH HOSPITAL.—A new Nurses' Home has been built in connexion with the Scarborough Hospital. The building has been erected on the site of an old house in Auborough-street, which communicated with the open space at the back of the hospital. It has direct communication with the hospital, and consists of a sitting or recreation room on the ground floor, a small service pantry, twelve bedrooms, two bath-rooms, lavatories, &c. The home is built of red brick. The principal contractors for the work have been Councillor Bland and Mr. Abraham Moore, and the whole has been carried out under the supervision of Mr. Frank A. Tugwell, architect. The total cost of the work exceeds 2 000*l.*

NORFOLK AND NORWICH SAVINGS BANK.—New premises have been erected in Red Lion-street for the Norfolk and Norwich Savings Bank. The general contractors for the work have been Messrs. Scarles Bros., the masonry has been carried out by Mr. J. G. Bush, and the carving executed by Mr. Minns, of Norwich. The marble-work has been done by the Art Pavements and Decorations, Limited, London. The heating apparatus, fire-places, &c., have been supplied by Messrs. Barnard, Bishop, & Barnards, Norwich; the electric lighting, wiring, and fittings by Messrs. Pank & Son, Norwich; and the electroliers in the banking hall by Messrs. Neatby, Evans, & Co., London. The architects were Messrs. G. J. & F. W. Skipper, whose designs were selected in a competition limited to the architects of the city and county.

BUILDING IN MOORFIELDS.—We understand that Mr. G. D. Martin has been appointed architect of the buildings that are about to be erected upon the site which has recently been cleared by the demolition of the Roman Catholic Church of St. Mary, Moorfields, and the adjoining presbytery, clergy-house, and school premises.

NEW THEATRE, ST. MARTIN'S-LANE.—Mr. W. G. R. Sprague has been entrusted with the preparation of the plans and designs of a theatre, having a capacity of 1,040 persons, to be erected upon the vacant site in St. Martin's-lane, with frontages on the south and west sides in St. Martin's-court.

Y.M.C.A BUILDINGS, ST. HELENS.—In a limited competition for plans for the erection of the new Young Men's Christian Association buildings for St. Helens, those of Messrs. Briggs & Wolstenholme, of Liverpool and Blackpool, have been accepted. The buildings will be erected on the plot of ground which adjoins the gymnasium, facing North-road. The principal feature of the ground floor will be the main entrance, which will be 16 ft. wide, and two shops on the Duke-street side, and five others facing North-road. Through the main vestibule will be an entrance hall, through which entry will be obtained to the present gymnasium. On the first floor there will be first reached an open reception hall, leading to the various rooms. On the left an entrance will be made to the gymnasium gallery, next the secretary's office and private room. A reading-room will look out on the corner of Duke-street, while immediately over the entrance will be a library and parlour for writing purposes. On the right, extending to the end, a lecture hall, which may be divided into three by folding doors, is planned. On the second floor there is to be a lecture-room the same size as the present assembly-room, together with other smaller rooms for caretakers, &c.

COTTAGE HOMES, ONGAR, ESSEX.—New cottage homes, to accommodate 300 children, are to be erected at Ongar for the Hackney Board of Guardians. Mr. W. A Finch has been instructed to prepare drawings for the homes.

COUNCIL CHAMBER, NEWPORT.—The foundation-stone of the permanent council chamber and offices of the Monmouthshire County Council was laid recently by the Chairman of the Council, Alderman Edwin Grove, at the buildings in course of erection at Pentonville, Newport. The new building is being erected from the designs of Mr. W. Tanner, the County Surveyor, by Messrs. D. Richards, Limited, builders, Newport, whose contract price is 8,470*l.*

THE VICTORIA WING, BLACKBURN AND EAST LANCASHIRE INFIRMARY.—It was decided in April, 1897, that Blackburn's permanent memorial of the late Queen's Diamond Jubilee should be an additional wing to the infirmary to be known as the Victoria wing, and should include a modern operating theatre. The plans of Messrs. Simpson & Duckworth, architects, of Blackburn, were accepted for the extension, and the foundation-stone was laid on June 22 in that year. All that was at that time definitely decided was that the extension should be in harmony with the south wing, so as to give a symmetrical appearance to the whole. The completion of the Victoria wing has balanced the front, there being now two blocks upon each side of the central block, which contains the main entrance-hall. The accommodation provided in the basement includes a pathological laboratory, dark room, and room for the use of the Rontgen rays, heating apparatus - chamber, linen and grocery stores, and room for the extra stores of clothing and for use as a sewing-room. All these rooms are well lighted, and the walls are finished with white glazed and red pressed bricks. The floors are finished either in marble terrazzo or with teak and maple wood blocks. On the ground floor is the boardrom (to be used also as the secretary's office) facing the front, measuring 26 ft. 6 in. by 20 ft. 8 in. Across the corridor are the private quarters of the resident medical staff. The floors, excepting in the main corridor, are finished with teak blocks. On the first floor is provided a sick ward to the front, 26 ft. 6 in. by 20 ft. 6 in., and across the corridor a suite of rooms for operations. The heating is by means of radiators upon the low pressure system, the hot water being supplied from calorifiers heated by steam. Each set of rooms is worked upon a separate system of circulating pipes. and each radiator is separately controlled by valves. A general temperature of 85 deg. Fahr. has been arranged to be maintained in the operating theatre, and a temperature of 75 deg. in the anæsthetic room, a normal temperature being required only in the rest of the building. Provision for ventilation is made by inlets to the radiators, the incoming air being passed through filter screens having a spray of water passing constantly over them when in use. The vitiated air is extracted by means of an electric fan with connecting tubes and flues from the several rooms. Further ventilation is provided by means of opening casements and hopper ventilators in the window frames. The additional accommodation provided in the Victoria wing is seven beds. When, however, the quarters vacated by the resident doctors have been converted into a ward, and the old operating-room turned into another ward, the entire accommodation will be for about 120 as against 102 at the present time. The principal contractor for the work has been Mr. W. J. Woof Cronshaw, of Blackburn, and the several sub-contractors were:—Messrs. T. Higson & Sons, joiner's work; Mr. John Dean, slater's work; Mr. W. H. Law, plumbing and glazing; Mr. W. H. Ainsworth, plastering; and Messrs. H. Pickup & Son, painter's work. The special contract work has been executed by:—Messrs. Minton, Hollins & Co., Stoke-upon-Trent, wall tiling; Mr. J. F. Ebner, London, wood block flooring; Messrs. J. & H. Patteson, Manchester, carving and marble terrazzo flooring; Mr. George Wragge, Manchester, wrought-steel window casements; Mr. Jas. Gibbon, locks and door furniture, &c.; and Messrs. Morrison, Ingram, & Co., sanitary fittings. The scheme for the heating and ventilation has been carried out by Messrs. Dargue, Griffiths, & Co., Liverpool; and the installation for the electric lighting has been undertaken by Messrs. G. H. Woods, & Co., of Blackburn, from the specification of the consulting electrical engineers, Messrs. Lester, Taylor, Kelly, & Hide, of Liverpool. The whole of the work has been

carried out under the superintendence of Messrs. Simpson & Duckworth. The operating theatre occupies the east end of the wing on the first floor. It measures 26 ft. 6 in. by 23 ft. Off it is a sterilising room, 12 ft. 6 in. by 6 ft. 7 in.; an anæsthetic room, 19 ft. by 13 ft. 6 in.; and the suite is completed with a small ward, 19 ft. 3 in. by 14 ft. 6 in. for gynæcological cases, and the usual laterine accommodation.

SCHOOL INFIRMARY, DENSTONE COLLEGE, STAFFORDSHIRE. — The Duchess of Sutherland recently laid the foundation stone of a new school infirmary in connexion with Denstone College. The object of the infirmary is to cope with the first outbreak of infectious diseases among the boys of the school. The staff will be placed in a position to deal with minor outbreaks of two or three orders of infectious disease. The portion of the infirmary now to be erected is a four-bed ward and a one-bed ward. The completed scheme provides for an isolation block for ten patients. It will be built of red bricks, with stone dressings, and tiled roofs. The architects are Messrs. R. Scrivener & Sons, and the builder Mr. Thomas Godwin, Hanley.

MISSION HALL, NORTH SHIELDS.—The foundation-stone of a new mission hall in Northumberland-street, North Shields, in connexion with Tynemouth Congregational Church was laid recently. The buildings will comprise a mission hall, children's school, vestry, class-rooms, &c. The school will accommodate over 200 children. The work will be carried out by Mr. Thomas Robson, builder, of Tynemouth, from plans by Messrs. Thomas A. Page & Son, architects, South Shields.

## *SANITARY AND ENGINEERING NEWS.*

PUBLIC IMPROVEMENTS IN BIRMINGHAM. — According to the *Birmingham Post*, considerable progress is being made with the various public improvements which have been undertaken by the Public Works Committee of the Corporation. The principal scheme is the reconstruction of the sewers, a project which was commenced about two and a half years ago, and will occupy the attention of the authorities and the Finance Committee, who have charge of the public purse, for some years to come ere it can be said to be within measurable distance of completion. At the outset the city was divided into five districts, and operations were commenced in Edgbaston and Harborne, a district which, in respect to its sewerage, was the worst in Birmingham. In the reconstruction of the sewers in the locality, which embraces practically the whole of the Edgbaston Parliamentary division, it became necessary to lay down about sixty-four miles of new foul-water pipes, and in addition many miles of storm-water pipes. The total cost of this portion of the scheme was estimated at 155,000*l.* in round figures, and it was believed that the work would be finished in about four or five years. This estimate in regard to time and money, it is expected, will be well within the mark. Nearly two-thirds of the work has already been accomplished, and if the same progress is maintained another twelve months or so ought to see the beginning of the end, so far as this particular district is concerned. Some of the worst neighbourhoods have been finished, and at the present time the work is proceeding in Edgbaston Park-road, Hermitage-road, Westbourne-road, Norfolk-road, Harborne-road, Calthorpe-road, and some of the adjoining thoroughfares. A good deal of the work is in the hands of contractors, but by far the most important part of the scheme is being carried out departmentally. The weather is responsible for the progress made, but it is believed that the culverting in the roads named will be completed within the next two months, and then other thoroughfares will be closed to traffic. As soon as the district is re-sewered the next worst of the five districts will be taken in hand, and so the work will be continued until the whole of the city has been provided with new sewers, which it is anticipated will be sufficient for all practical requirements for about half a century. Another important matter which is engaging the attention of the Public Works Committee is the construction of the Rea main sewer at Saltley. It runs from Montague-street alongside the river Rea through the land of the Midland Railway Company and the Gas Department to beyond Nechells Recreation Ground, a 6-ft. culvert being used between Montague-street and Saltley-viaduct, and a 7-ft. culvert from that point to the terminus. The Sewer Department is also very busy in other parts of the city, not only in respect to the renewal of pipes, but in the inspection and superintendence of the sewerage in those districts where the building trade is especially active just now. Street and road improvements are in progress on every side of the city. Those people who are acquainted with Pritchatt's-lane, which runs from Edgbaston Park-road to Somerset-road, well know what a narrow awkward thoroughfare it is. It is an important link, which to all intents and purposes connects the Bristol-road with Harborne, and all who use it will rejoice to learn that it is now to be straightened and broadened and made something like what a public road should be. In the central parts of the city attention is turned to Summer-lane, where between Snow Hill and Hospital-street the macadam is being replaced by granite on a concrete foundation. The upper part of Broad-street has recently been relaid with wood, and the London and North-Western Railway Company are improving the bridge in Navigation-street which carries the thoroughfare over the railway from Hill-street to Pinfold-street. The wood floor on the top of the girders is in course of restoration, and when that is finished the Road Department of the Corporation will, at the expense of the company, complete the work by laying down on a concrete foundation a new granite pavement.

TRURO SEWERAGE AND SEWAGE DISPOSAL.—The City Council at their meeting on the 13th inst. adopted the recommendation of the Sanitary Committee that the services of Messrs. Beesley, Son, & Nichols, of Westminster, be retained as engineers for the preparation of a scheme for the interception and disposal of the sewage of the city.

EXTENSION AND MAINTENANCE OF LIVERPOOL DOCKS.—The annual Report by Mr. Anthony G. Lyster, Engineer to the Mersey Docks and Harbour Board, on the general state and progress of the dock works at Liverpool shows that large works have been carried out during the year, and that several extensions are still in progress. Reference is made to the completion of the new tobacco warehouses at Stanley Dock, which has fourteen floors, with an aggregate area of 36 acres, and is capable of storing 60,000 hogsheads. Some figures are given in the Report regarding the dredging work done at the bar and in the channels leading therefrom to Liverpool. The quantity of sand removed during the year amounted to nearly 9,000,000 tons, the result being that the condition of the bar and the channels has been fairly maintained. In conclusion, the Report states that the amount of work carried out under the control of the Engineer's department has been exceptionally large during the year. The wages bill has at times been within a few pounds of 11,500*l.* per week, and the number of men employed has been upwards of 7,800 at one time. These figures, it is pointed out, are exclusive of payments to contractors, and do not include the men employed by them. The total expenditure in the Engineer's department for the year has been 1,230,949*l.*

LEEDS WATER SUPPLY.—The available water in the Leeds Corporation reservoirs has now been reduced to a quantity equivalent to 48½ days' supply. At the corresponding period last year there was enough to last 78 days. It is stated that the recent rainfall has not benefited the reservoirs in the slightest degree. The position was discussed at a meeting of the Waterworks Committee on the 16th inst., and steps were taken for increasing the supply and diminishing the consumption.

## *FOREIGN.*

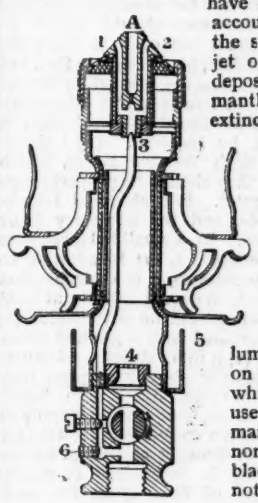
FRANCE.—M. Scellier de Gisors, the official architect to the Luxembourg, is occupied with the restoration of the chapel of the palace, a beautiful interior which has for a long time been used as a storehouse for things not wanted. An exhibition of pictures of English, Spanish, and Italian painters is also to be organised at the Luxemburg.——A new Hôtel de Ville has been built at La Ferte Macé (Orne), as the result of an architectural competition, in which the design by MM. Kepfer and Lepeigneux, of Paris, was selected.——The Société des Amis des Arts of la Manche has opened its fifth annual exhibition at Cherbourg.——A fine chimney-piece by M. Felix Charpentier, the model of which figured in this year's Salon, has been erected in the Salle des Fêtes of the Town Hall at Avignon. Two bronze figures, symbolising Wine and Cider, support the entablature, which is surmounted by a group of Bacchantes carved in stone.——M. Ulmann, architect, has been commissioned to carry out the large buildings for the Institut des Sourds-Muets for the Department of the Seine.——A palace for the Military Commandant is shortly to be commenced at Tunis, at a cost of 2,300,000 fr.——M. Louis Chapelle, a well-known contractor for public works at Paris, has been killed in an accident to an automobile car at Corneville-sur-Risle, near Rouen. He had taken a large part in the construction of the buildings for the Paris Exhibition of last year.

AUSTRALIA.—A large railway station is about to be erected at Port Pirie, South Australia.——A Roman Catholic church is being erected in Merrigum, Victoria.——Mr. James Henderson, architect, of Newcastle, New South Wales, has been commissioned by Messrs. Fred. Ash, Limited, to prepare plans for a large bond and bulk warehouse, to be erected in Burwood-street, Newcastle.——The Government has decided to have statues executed of Sir Henry Parkes, James Squire Farnell, Daniel Henry Denieby, Dr. Lang, and Sir James Martin, and they are to be placed in niches on the exterior of the Lands Office, Sydney. They will be of sandstone.——The Parramatta Hospital for the Insane is to be considerably enlarged.——A church is to be erected at Thoona, Victoria, for the Church of England congregation. ——A large hotel is being built at the corner of Gipp-street and George-street, Sydney, on the site of the old Larkin Hotel.

## *MISCELLANEOUS.*

PAINTING CONTRACT AT FULHAM.—At the meeting of the Fulham Board of Guardians on Thursday last week, the General Purposes Committee reported that they had considered the following tenders for painting and cleaning works at the infirmary and offices: — Joseph Halse, Fulham, 1,645*l.*; W. J. Rensbaw, Putney, 1,497*l.*; J. Bendon, Hammersmith, 1,050*l.*; Vigor & Co., Poplar, 860*l.*; J. J. Richards, Brixton, 792*l.*; G. McArthur, Fulham, 760*l.*; E. Mills, Westcombe Park, 743*l.* They recommended the acceptance of the tender of Mr. McArthur, lowest but one. Mr. Rule drew attention to the discrepancy in the tenders, and said the Committee ought to have employed a quantity surveyor before inviting tenders. It would have been more business-like, and would have cost only about 25*l.* Surely one man was not going to do for 743*l.* the same work that another wanted 1,600*l.* for! The Chairman (Rev. P. S. G. Propert) said the Committee had the architect before them, and went into the matter as fully as they could. Mr. Westwood said the architect told the Committee that the estimate of 1,600*l.* was altogether beyond the mark, and that although Mr. McArthur would have to cut it fine, at the same time he thought it possible for him to do the work for the money. Mr. Peter Lawson desired to know why the lowest tender should not be accepted, saying that Mr. Mills had carried out work satisfactorily in the past. The Chairman replied that the Committee, in its wisdom, thought that for a matter of 17*l.* the tender should not be taken from a local man. Ultimately the Committee's recommendation, to accept Mr. McArthur's tender, was adopted. It was further resolved that a clerk of works be appointed at a salary of three guineas a week, and that the architect be requested to select a qualified man for the post. Afterwards it was stated by the architect that the Clerks of Works' Association had informed him that four guineas a week was the minimum salary that could be accepted by a qualified clerk of works. It was decided to empower the architect to agree to the larger salary if necessary.

NON-LUMINOUS BYE-PASS FLAME FOR INCANDESCENT BURNERS.—Hitherto incandescent burners fitted with a bye-pass for kindling the main gas jet have been objectionable on account of the liability of the small luminous bead or jet of flame to produce a deposit of carbon on the mantle, and its liability to extinction by air draughts or by the sudden cutting off of the gas supplying the main flame. Mr. A. Clarke, of Albion-road, London, has sent us a burner in which the bye-pass device has, by an extremely simple device, been altered to produce two small non-luminous flames situated on the sides of the socket which receives the rod used to support the mantle. The flames being non-luminous cannot blacken the mantle. We notice also that the gas supplying the main flame may be alternately turned on and off suddenly, repeatedly, and in quick succession without extinguishing the bye-pass flames, and that the latter are less readily extinguished by draughts than the single luminous flame usually employed.




THE ROMAN VILLA AT BRISLINGTON, BRISTOL.—The further investigations carried on at the site of the Roman villa have resulted in the discovery of a large number of interesting Roman relics. In addition to human remains, &c., the well has also, we are informed, yielded an abundance of objects of considerable interest, among them being a series of seven metal vessels of great rarity, with handles beautifully marked. A quantity of Roman pottery, including a pretty little pitcher in a perfect state of preservation, is likely to be admired. Near the bottom of the well were found some remains of wooden buckets, with portions of iron handles attached; also part of a comb cut in wood, with fine teeth on one side and coarse on the other. Some of the articles in bronze included a very nicely worked spoon, also a pin and fibula. The whole of these finds has been handed over to the Museum.—*Bristol Times.*

IMPROVEMENTS IN HOXTON.—The Shoreditch Borough Council have lately opened new premises in Branch-place, Hoxton, of which the lower portion constitutes an addition to their electrical lighting works, whilst the upper part of the house will form a "shelter" for temporary occupation by poor families in whose own homes infectious disease has broken out, and who are therefore dispossessed for a term during the disinfection of their rooms.

SWEDISH GRANITE AND TIMBER.—In the Gothenburg district quarrying is reported (officially) to be now carried on on a very large scale. The granite industry of Lysekil and the immediate vicinity thereof chiefly comprises the production of paving-

stone, of which considerable quantities are shipped to the United Kingdom and the Continent. Granite for building and other purposes is obtained at the quarries farther north, bordering the Norwegian frontier. The granite is said to have found a good market of recent years in the United Kingdom. The exports of it last year included 63,024*l.* worth from Strömstadt, 3,157*l.* from Uddevalla, 755*l.* from Marstrand, 14,540*l.* from Warberg, 28,000*l.* from Halmstad, and 57,122*l.* from Carlscrona. The year was most satisfactory to those engaged in the timber trade. Both redwood and whitewood, particularly in large dimensions, were easily disposed of at advancing prices, whereas battens and small dimensions met with less demand, and the prices of these could consequently not be fully maintained. The prospects of the timber trade are stated to be at present very good, and sawmill owners and shippers consequently look forward to another prosperous season. Last year's exports included from Gothenburg 55,436 standards of deals, battens, and boards, 1,382 standards of other wood goods, joinery to the value of 276,305*l.*, laths to the value of 119,440*l.*, and turners' goods to the value of 25,771*l.*; from Uddevalla 12,023 standards of wood, and joinery to the value of 25,978*l.*; from Warberg 7,100 standards of wood; from Halmstad 45,000 standards; from Helsingborg 11,596 standards; and from Carlscrona 13,450 standards.

SCHOOL BUILDINGS.—The Board of Education has issued the following rules as to the building of Higher Elementary Schools:—"1. Article 110 (6) of the Code limits the numbers of a Higher Elementary school to about 300. For such a school ten classrooms will generally be required, since every class should have its own classroom. Of the ten classrooms at least four should be suitable for a class of forty scholars. 2. (*a*) A classroom for forty scholars should have an area of about 620 square feet; a classroom for thirty scholars should have an area of about 480 square feet. (*b*) All classrooms must be furnished with single desks; the desks should be 2 ft. long, arranged in pairs with intervals of 2 in. and gangways of 2 ft. 3. Every Higher Elementary school should be provided with suitable laboratories. (*a*) The laboratory accommodation must be sufficient to provide at one time for the largest class in the school. (*b*) There should generally be one laboratory for chemistry and one for physics. (*c*) A laboratory should afford 30 square feet of floor space for each scholar; the minimum size will, therefore, be 600 square feet, but it is, as a rule, desirable that the laboratory should be somewhat larger. If, however, the laboratory accommodates more than twenty-five scholars, a second teacher would be required. (*d*) Laboratories must be fitted with suitable tables, which must be well lighted; they should be properly supplied with gas and water. For chemical laboratories, sinks, cupboards, and the necessary fume closets must be provided. (*e*) A small balance-room may be provided if desired. 4. (*a*) In addition to the classrooms and laboratories, it is desirable that a Higher Elementary school should include at least one lecture-room, which should be fitted with (1) demonstration table furnished with a gas and water supply and a sink, and (2) a fume closet. A lecture-room should have an area of about 750 square feet. (*b*) A small preparation-room, fitted with bench sink, cupboard, and shelves, and proper supply of gas, should be provided in a convenient position for the lecture-room. 5. A drawing classroom for the more advanced drawing is desirable. It should provide 30 square feet of floor space for each scholar; the best size will be a room with an area of 750 square feet. If suitably lighted the hall would answer for this purpose. 6. Other special rooms for cookery, laundry work, and manual instruction should be provided in accordance with the Rules in Schedule VII. of the Code. 7. A Higher Elementary School may be planned with a central hall, but no class (other than drawing) can be recognised in such a hall. Good dimensions for such a hall would be 50 ft. by 25 ft. As an alternative the hall might be adapted for use as a gymnasium when occasion requires. Such a gymnasium for a school of 300 children should have a floor space of 1,800 square feet. The gymnasium should not be adjacent to the laboratories."—*Standard.*

HOUSING QUESTION, LIVERPOOL.—Colonel W. R. Slacke, R.E., an Inspector of the Local Government Board, held an inquiry in the Town-hall, Liverpool, into the application of the City Council to the Local Government Board for sanction to borrow 42,500*l.* for the erection of dwellings for persons of the working classes. Mr. Cripps, assistant solicitor to the Corporation, at the outset explained that the application was to borrow 42,500*l.* to provide for the erection of 251 dwellings, which would accommodate 1,071 persons. The site was that known as the Adlington-street area, and was bounded by Adlington-street, Henry Edward-street, Lace-street, and Bispham-street. The Corporation had on a former occasion given a pledge to erect houses to accommodate a large proportion of the people who had been, or would be, dispossessed owing to the demolition of insanitary property. In respect of that pledge, they had built, were building, or were about to build, 353 houses, estimated to accommodate 1,648 persons. The Corporation had also in prospect, in fact they had acquired, sites for building workmen's dwellings, and would shortly be in a position to submit further plans for houses capable of accommodating about 1,200 persons. By this application they intended to make provision for the rehousing of 80 per cent. of the dispossessed tenants on the particular area. They were providing for ten four-roomed dwellings, 133 three-roomed dwellings, sixty two-roomed dwellings, and forty-eight one-roomed dwellings. The one-roomed houses were very useful, and a large number of people would be in the workhouse or receiving parish aid if such one-roomed dwellings were not provided. Regarding the repayment of the money they desired to borrow, Mr. Cripps said the Housing Committee hoped the Local Government Board would see their way to extend the period to sixty years. The buildings were erected and looked after by the Corporation, and were estimated to have at least 120 years' life. In regard to land, they thought they ought to be allowed 100 years within which to repay loans. Mr. F. T. Turton, deputy surveyor, gave details of the scheme connected with the present application. Subsequently the inspector visited the area in question.

NORFOLK MARKET HALL, SHEFFIELD. — The Finance Committee of the Sheffield City Corporation are advertising for plans from local architects for the structural improvement of the Norfolk Market Hall, the principal of the markets of which the Municipal Authority has control. The object is to improve the letting value of the property, and the improvements to be effected include the better natural lighting of the interior (possibly by the provision of more windows), the development of the shop accommodation both interior and exterior (by the removal of the existing stalls and appliances, or otherwise), and the provision of more adequate lavatory accommodation in such position as to be available for those using the market and the public outside. Competing architects are to be at liberty to show in their plans a gallery carried around the interior of the hall at the first-floor level, to give the public access to an upper story of shops, if such an arrangement is considered commercially practicable. The estimated cost of these improvements is not to exceed 15,000*l.*

THE GOUPIL GALLERY.—Messrs. Boussod Valadon & Co. have disposed of their London galleries to their late manager, Mr. William S Marchant, and have further granted to his firm, Messrs. William Marchant & Co., the sole right to describe themselves as Messrs. Boussod Valadon & Co.'s agents in the United Kingdom.

SALES OF PROPERTY. — Messrs. Protheroe & Morris will sell by auction on the 24th inst., on the estate, seventy freehold sites, comprising a further portion of the East Pentire Building Estate, Newquay, Cornwall. The estate, overlooking the Fistral Beach and the Gannel, faces the Atlantic Ocean, is about 100 ft. above sea level, and within one mile of Newquay Station on the Great Western Railway. The lots to be offered are suitable for the erection of detached residences, shops, and bungalows, together with an hotel site.——Mr. E. A. Jephcott, of Alcester, will sell by auction at Swan Hotel, Alcester, on the 28th inst, the old Presbyterian Meeting House, Alcester, which was erected in 1723. Also the old panelled oak, &c., therein (estimated from 3,500 to 4,000 superficial feet).

THE DEVONIAN CLUB.—The Committee of the Devonian Club, on the 20th inst., elected as honorary secretary Mr. C. H. Brodie, A.R.I.B.A., in succession to Mr. George Wreford, C.C., the founder and honorary secretary from the commencement in 1891. Architects and their assistants who hail from the western shire are invited to communicate with Mr. Brodie at the club, Adelphi Hotel, W.C.

## *CAPITAL AND LABOUR.*

DUNDEE BUILDING TRADE. — An important agreement, affording a promise of industrial harmony in Dundee building trade, has been entered into between the masters and operative masons of the city. This section of the building trade has within recent times suffered from strikes and petty disputes involving a good deal of friction between employers and employees. The agreement referred to—the terms of which have now been accepted by both parties—provides that for a year, that is to say as from June last, no reduction will be made in wages. Having regard to the present position and prospects of the trade this provision has proved specially acceptable to the operatives. The interests of the masters are safeguarded by a clause which will have the effect of prohibiting the calling out of men from the jobs of employers whose policy and actions do not coincide with the views of the Union officials. Probably the most important feature of the agreement is a proviso for the appointment of an arbiter mutually chosen, whose decision in all matters of dispute will be binding on the signatories to the agreement.—*Dundee Advertiser.*

## RECENT PATENTS:

### ABSTRACTS OF PATENTED INVENTIONS.

7,077.—DREDGING APPARATUS: *F. Hoffmann.*—Two shafts with intermediate bevel-wheels drive a dredging-wheel at the mouth of a suction-pipe; pipes, or that portion of the mouth of the suction-pipe which the ground covers, will regulate the ratio of the amounts of dredged material and water. If a turbine is adjusted at the mouth of the suction-pipe, that ratio will be regulated with a curved slide worked by a rod and covering a portion of the turbine-wheel; the ratio is indicated by pressure upon an air-bubble manometer within the upper arm of the suction-pipe, which for dredging in different depths can be made after the telescopical kind.

7,092.—A GOVERNOR FOR WATER-WHEELS: *E. F. Cassel.* — Springs compress together two discs which form the wheel, and each spring carries a bucket against which a jet is directed, unequal and adjustable weights affixed to frames constitute a differential governor mounted upon brackets, when the speed becomes too high the discs are forced asunder by the arms of the governor and the jet then escapes between the separated buckets; one set of buckets may be discarded, or loaded arms pivotted on to one of the discs may be employed instead of the weights. By another arrangement the buckets are divided, and a pivotted loaded arm is attached to the underside of each half-bucket, whereby as the speed becomes excessive the halves open asunder through the centrifugal force exerted.

7,316.—A DAM OR DYKE FOR WATER: *G. Serrazanetti.*—In order to control a sudden increase of water flowing down a torrent, a dam or dyke is constructed across the narrow portion of the valley, and its lower part (which is built up of mixed earth and straw) is strengthened with a casing of iron bars and wire trellis-work that surrounds a block of gravel and stones. The collected water is suffered to flow away through channels cut in the dam, and along the hillside additional overflow canals are supplied.

7,337.—MEANS OF HEATING WATER: *F. Hatcher.*—A gas-geyser has an outside cylindrical wall and an inside conical roughened or corrugated wall, which constitute an annular water receiver to which an outlet is fitted. The heater is joined to the inlet, and, by tubes, to the discharging-ring, by which means the discharged water is directed against the inside casing.

7,356.—AN INCANDESCENT LAMP: *E. Schattner and F. W. Harmer.*—A parallel rod of carbon or some other conductive substance serves for a preliminary heating of a magnesia or similar refractory incandescence rod, and after the magnesia rod has become heated the supply of current to the heater will be cut off by the thermal expansion either of a coiled strip having a contact-arm or of a magnesia rod which actuates a contact-spring mounted upon an insulating support and a metal strip.

7,366.—A CONTRIVANCE FOR WINDOWS: *H. Pieper.*—The inventor's object is to maintain a uniform temperature within the room and to prevent moisture from becoming condensed or frozen upon the window. Double panes are employed for the glazing, and openings or channels extend from the spaces between the panes to the air outside, the entrance of dust through the openings is obstructed with wire strips.

7,369.—SPIGOT-AND-SOCKET AND SLEEVE JOINTS: *Ritter von R. S. Traunfels.*—In order to dispense with asbestos or similar packing materials in the case of pipes that may be subjected to a high temperature, copper or other metal cones are deposited, for a sleeve-joint, upon the pipes with an electrical current, and nuts are set in engagement with the screw-threaded double conical sleeve; for another mode of jointing, and in substitution of the conical sleeve, a thin layer of copper is deposited upon the pipes, and conical sleeves are heated and then drawn over the copper surface. In the case of a spigot-and-socket joint, one conical piece only is made, one of the pipe-ends being screw-threaded.

7,401.—A VENTILATOR: *F. F. Rawlings and W. R. Rawlings.*—The apparatus comprises a middle frame which is to be built into the wall, a gauze or other screen over a louvred grating, and an inside frame containing a counter-weighted valve which may be shut with a pull-cord and is fitted with stops and a buffer-pad.

7,403.—A FASTENING FOR DOORS, WINDOWS, &C: *A. Graham.*—For a sliding window a pivoted piece, on which is a pierced projection, is carried by a plate which is affixed to one of the frames. To the other frame is affixed a plate, from the under side of which project lugs or pieces wherein a spring-controlled bolt will slide for engagement with the pierced projection. The bolt is to be drawn back with a pin that slides in a slot in the latter plate, whereupon the lug is freed, and one can lift the pivoted piece for the separation of the frames.

7,406.—WORKING OF STONE: *F. Trier.*—Upon the slide of a reciprocating machine having rolling cutters are disposed auxiliary cutters which are oppositely inclined to the main cutters. Trunnions carry the holders of the finishing tools that may be worked with a stop-rod for a reversal of the skew with the end of the stroke, and in order to start the rolling of the cutters they are laid against elastic adjustable rails; collars and pins hold the shank of the holder in any one of four positions in order that the cutters may work upon a rest having a swivel-adjustment. For giving the skew the holder is caused to rock between stops. Various other adaptations and features of the machinery are specified.

7,433.—A BALL AND SOCKET JOINT: *H. Hirst and F. H. Collings.*—An adjustable support for a

straight rod upon a base-plate is supplied by means of a ball that is retained between a stem upon the base-plate and a slotted socket, the latter being held with a flange, which engages with a coupling-ring screwed on to the stem. The contrivance enables the socket to turn about the stem, and the rod can move angle-wise in any direction upon the base-plate.

7,459.—JOINTS AND COUPLINGS FOR WATER-CLOSET PIPES: *C. H. Moore.*—An annular recess is fashioned in the basin, which is also undercut for taking the flanges of a screwed collar which is affixed with lead and cement. The collar is set in engagement with the interior screwed collar of the leaden soil-pipe. In another form, a bayonet joint may be substituted for the screw joint of the soil-pipe.

7,503.—A FILLING FOR WOODEN BLOCK PAVEMENTS: *T. K. Muir.*—Some flexible absorbent fabric is filled in between the rows of the blocks, the fabric having been previously coated with a compound of granulated cork, saw-dust, &c., steeped in a water-proofing material, such as tar or asphalt.

7,505.—ARRANGEMENT OF BUNSEN GAS-BURNERS: *P. Lacroix.*—The burners are fashioned so that the relative positions of the axes of the gas-jet and the mixing-tube may be experimentally adjusted before they are finally secured in their places, a tube that is pierced with air-holes is put around the gas-jet which is mounted upon another tube; in one variant shape the mixing-tube can be adjusted so as to be only parallel to the axis, with one set of three screws, in another shape two sets of three set-screws, disposed on a circle, secure the mixing-tube to the perforated tube, so that its adjustment may be either inclined or horizontal.

7,534.—AN APPLIANCE FOR USE WITH CRANES: *A. E. Brown.*—By this invention, which, whilst primarily intended for pontoon cranes or derricks, is claimed to be available also for use with cranes and similar hoisting machines on land, it is arranged that a balance weight which runs upon rails in the line of tipping shall be moved so as to act against the tip of the pontoon with ropes, the ropes being worked by a steam or other motor. The controlling valve of the motor is joined to floats in tanks which are disposed in the line of tipping.

7,579.—FITTINGS FOR SLIDE RULES: *R. C. Smith and J. Cruickshank.*—For indicating the order of "tens" in a result is devised a slide-rule or calculating scale made of carboard, two scales are graduated upon the slide, which has guides consisting of clamps (on each of which is a flexible celluloid transparent plate) that are inserted through holes in the body of the scale and turned over the flexible transparent plates of the rule, exponents are affixed on to the members of the scale of the stationary body; there are a central line on the transparent cover and a middle dividing line on the middle of the slide, together with printed columns of figures or other customary signs upon the principal slide and a supplementary slide, a clamp secures a flexible transparent cover (put between covers upon the rule) to the back of the auxiliary scale; suitable marks are adopted for showing that the figures upon the left-hand portion of the slide-rule have values equal to one-tenth of those upon the right-hand portion. Confer also No. 24,078 of 1897.

7,608.—ELECTRODES FOR ARC LAMPS: *E. Rasch.*—Refractory oxides are used for electrodes that will conduct only after their preliminary heating by a flame, a resistance, or spark-discharge. They may be composed also of oxides of chromium, iron, copper, uranium, or other materials that will conduct to a certain degree at an ordinary temperature, and the application of a high electrical pressure will start the arc between them. The electrodes should be highly heated after they have been moulded, and for their vitrification they should contain metallic salts or fluxes. For other means of starting the arc it may be put between auxiliary electrodes formed of carbon, carbides, silicides, oxides, or other conductive bodies, mixed—it may be—with metallic salts.

7,657.—AN ATTACHMENT FOR ELECTRICAL LAMPS, &c.: *W. T. Burbey.*—The opening that takes the cord-grip of a flexible conductor is serrated, or a projection from the holder is placed in engagement with a groove in the grip, so that the grip, which is held with a screw-cap, shall not be liable to be turned in the ceiling-rose or similar lamp-holder.

7,662.—A COMBINATION, OR PERMUTATION, LOCK: *W. S. Monroe & J. W. Cross.*—A follower works the latch bolt from without, and a handle upon the spindle works it from within, when some of the pins have been pressed inwards for their disengagement from the locking-plate the turning of a knob operates the follower, but if one tries to turn the knob when the proper pins have not been pressed, the tumbler becomes turned so as to force a spring against a pivoted stud and thereby close an electrical circuit for the sounding of an alarm; a handle on the inside of the door will turn the stud out of action, the block upon which the stud is pivotted is held in its place with a spring which also acts upon the lever which regulates the lock-bolt; for reversing the mechanism so as to serve for right and left hand doors the bolt, &c., can be removed and turned over, the tumbler and follower having equally-sized bosses, whilst some of the pins can be withdrawn and reversed if one wishes to vary the combination; a pin-and-slot contrivance restricts the motion of the locking-plate which can be turned far enough for withdrawal of the bolt, but not far enough for the entry of the pins into fresh holes.

## MEETINGS.

SATURDAY, AUGUST 24.

*Northern Architectural Association.*—Visit to South Shields.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

August 9.—By WILLSON & PHILLIPS (at Chelmsford).

| | |
|---|---|
| Danbury, Essex.—Danbury Common, Pensioner's Box, c. | £185 |
| Runwell, Essex.—Cole Hill, cottage and 1 a., c... | 110 |
| Stock, Essex.—Birch-lane, &c., five cottages, f. .. | 340 |

August 10.—By T. W. GAZE & SON (at Norwich).

| | |
|---|---|
| Little Plumstead, Norfolk.—The Hall Farm, 210 a. 1 r. 16 p., f. | 2,850 |

By T. RULE OWEN & SON (at Tenby).

| | |
|---|---|
| Tenby, Pembroke.—The Trevayne Estate, 310 a. 2 r. 23 p., f. | 8,500 |
| Saint Issells, Pembroke.—The Hean Castle Estate, 86 a. 1 r. 18 p., f. | 4,250 |

August 12.—By EDWIN J. GILDERS (at Clacton).

| | |
|---|---|
| Clacton-on-Sea, Essex.—Beaconsfield-rd., Rockview, f. | 450 |
| Holland-rd., Holland Lodge, r. 132*l.* 10s., f. .. | 2,450 |
| Marine Parade, plot of land, f. | 950 |
| Penfold-rd., four plots of land, f. | 810 |
| Tower-rd., corner plot of land, f. | 305 |

August 13.—By JONES, SON, & DAY (at Masons' Hall Tavern).

| | |
|---|---|
| Walthamstow.—Black Horse-rd., the Union Jack off-licensed premises, u.t. 47 yrs., r. 60*l.*, with goodwill | 3,500 |

By W. H. STICKNEY (at Hull).

| | |
|---|---|
| Skeffling, Yorks.—East Field, three closes of arable land, 22½ a., f. and c. | 455 |

August 14.—By BEALE & CAPPS.

| | |
|---|---|
| Notting Hill.—Ladbroke-grove, Ladbroke Hall, u.t. 63 yrs., g.r. 4*l.* 1s. (two leases), with licence, as a going concern; also 126, Ladbroke-grove, u.t. 15 yrs., r. 110*l.*, rising to 120*l.* | 2,900 |

By CHADWICK & SONS.

| | |
|---|---|
| Pentonville.—7, 9, and 11, Granville-sq., u.t. 25¾ yrs., g.r. 6*l.*, r. 150*l.* | 1,170 |

By E. W. RICHARDSON & SON.

| | |
|---|---|
| St. Pancras.—23, Argyle-st., u.t. 41¼ yrs., g.r. 10*l.*, r. 91*l.* | 465 |

August 15.—By BISLEY & SONS.

| | |
|---|---|
| Bermondsey.—17 and 18, Cadbury-rd., u.t. 64¾ yrs., g.r. 9*l.* | 550 |
| Ilford.—187 and 189, Thorold-rd., u.t. 96 yrs., g.r. 11*l.*, r. 52*l.* | 390 |
| Manor Park.—60, 62, and 64, Lawrence-av., f. .. | 800 |

By LINNETT & LANE.

| | |
|---|---|
| Harlesden.—119 and 121, Fortune Gate-rd., u.t. 93 yrs., g.r. 11*l.* | 560 |

By STIMSON & SONS.

| | |
|---|---|
| Finchley.—1 to 4, Field's-cottages, f. | 825 |
| High-rd, block of land, area ½ a., f., l., and c. | 735 |
| High-rd, Wentworth House, f., r. 75*l.* | 1,700 |
| High-rd., Lyndon House, f., r. 60*l.* | 1,205 |
| High-rd., Catherine Villa and Catherine Cottage, f. | 1,100 |
| Whetstone, Middlesex.—Athenæum-rd., two cottages and ½ a., f. | 405 |
| Barnet.—May's-lane-rd., block of freehold building land | 160 |
| Shephall, Herts.—Broadwater, two cottages and 2 a. 1 r. 16 p., f. and c. | 405 |
| Caddington, Beds.—The Rose and Crown b.-h., f., r. 25*l.* | 450 |
| Nunhead.—58, 62, and 64, Evelina-rd., u.t. 72 yrs., g.r. 13*l.* 10s. | 840 |
| Peckham.—50, Harders-rd., u.t. 62½ yrs., g.r. 4*l.* 5s. 8d., r. 30*l.* | 340 |
| Norwood.—18, Anerley-rd., u.t. 49 yrs., g.r. 43*l.*, r. 100*l.* | 500 |
| Wimbledon.—7, Lower Downs-rd., u.t. 81 yrs., g.r. 12*l.*, e.r. 40*l.* | 310 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

## PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

### BRICKS, &c.

| | £ s. d. | | |
|---|---|---|---|
| Hard Stocks | 1 14 0 | per 1,000 | alongside, in river. |
| Rough Stocks and Grizzles | 1 11 0 | ,, | ,, ,, |
| Facing Stocks | 2 12 0 | ,, | ,, ,, |
| Shippers | 2 8 0 | ,, | ,, ,, |
| Flettons | 1 8 6 | ,, | at railway depôt. |
| Red Wire Cuts | 1 14 6 | ,, | ,, ,, |
| Best Fareham Red | 3 11 0 | ,, | ,, ,, |
| Best Red pressed Ruabon Facing. | 5 5 0 | ,, | ,, ,, |
| Best Blue Pressed Staffordshire | 4 4 6 | ,, | ,, ,, |
| Do., Bullnose | 4 9 0 | ,, | ,, ,, |
| Best Stourbridge Fire Bricks | 4 2 6 | ,, | ,, ,, |

### PRICES CURRENT (*Continued*).

| GLAZED BRICKS | £ s. d. | | |
|---|---|---|---|
| Best White and Ivory Glazed Stretchers | 13 0 0 | per 1,000 | at railway depot. |
| Headers | 12 0 0 | ,, | ,, ,, |
| Quoins, Bullnose, and Flats | 17 0 0 | ,, | ,, ,, |
| Double Stretchers | 19 0 0 | ,, | ,, ,, |
| Double Headers | 16 0 0 | ,, | ,, ,, |
| One Side and two Ends | 19 0 0 | ,, | ,, ,, |
| Two Sides and one End | 20 0 0 | ,, | ,, ,, |
| Splays, Chamfered, Squints | 20 0 0 | ,, | ,, ,, |
| Best Dipped Salt Glazed Stretchers and Headers | 12 0 0 | ,, | ,, ,, |
| Quoins, Bullnose, and Flats | 14 0 0 | ,, | ,, ,, |
| Double Stretchers | 15 0 0 | ,, | ,, ,, |
| Double Headers | 14 0 0 | ,, | ,, ,, |
| One Side and two Ends | 15 0 0 | ,, | ,, ,, |
| Two Sides and one End | 15 0 0 | ,, | ,, ,, |
| Splays, Chamfered, Squints | 14 0 0 | ,, | ,, ,, |
| Seconds Quality White and Dipped Salt Glazed | 2 0 0 | ,, | less than best. |

| | s. d. | | |
|---|---|---|---|
| Thames and Pit Sand | 7 3 | per yard, | delivered. |
| Thames Ballast | 6 0 | ,, | ,, |
| Best Portland Cement | 34 6 | per ton, | delivered. |
| Best Ground Blue Lias Lime | 25 6 | ,, | ,, |

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

| | |
|---|---|
| Grey Stone Lime | 12s 6d. per yard, delivered. |
| Stourbridge Fire-clay in sacks, | 28s. 0d. per ton at rly. dpt |

### STONE.

| | s. d. | | |
|---|---|---|---|
| Ancaster in blocks | 2 0 | per ft. cube, | deld. rly. dep't. |
| Bath ,, | 1 7 | ,, | ,, |
| Farleigh Down Bath | 1 8 | ,, | ,, |
| Beer in blocks | 1 6½ | ,, | ,, |
| Grinshill ,, | 1 10 | ,, | ,, |
| Brown Portland in blocks | 2 2 | ,, | ,, |
| Darley Dale in blocks | 2 1½ | ,, | ,, |
| Red Corsehill ,, | 2 5 | ,, | ,, |
| Red Mansfield ,, | 2 4½ | ,, | ,, |
| Hard York in blocks | 2 10 | ,, | ,, |
| Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.) | 2 8 | per ft. super. | at rly. depôt |
| ,, ,, 6 in. Rubbed Ditto | 3 0 | ,, | ,, |
| ,, ,, 3 in. sawn both sides slabs (random sizes) | 1 3 | ,, | ,, |
| ,, ,, 2 in. self-faced Ditto | 0 9½ | ,, | ,, |
| Hopton Wood (Hard Bed) in blocks | 2 3 | per ft. cube. | deld. rly. depôt. |
| ,, ,, ,, 6-in sawn both sides landings | 2 7 | per ft. super. | deld. rly. depôt. |
| ,, ,, ,, 3-in. do. | 1 2½ | ,, | ,, |

### SLATES.

| in. in. | £ s. d. | | |
|---|---|---|---|
| 20×10 best blue Bangor | 11 5 0 | per 1000 of 1200 | at rly. dep. |
| ,, best seconds ,, | 10 15 0 | ,, | ,, |
| 16× 8 best ,, | 6 2 6 | ,, | ,, |
| 20×10 best blue Portmadoc | 10 18 0 | ,, | ,, |
| 16× 8 best blue Portmadoc | 6 0 0 | ,, | ,, |
| 20×10 best Eureka unfading green | 11 2 6 | ,, | ,, |
| 16× 8 ,, ,, | 6 15 0 | ,, | ,, |
| 20×10 Permanent green | 10 0 0 | ,, | ,, |
| 16× 8 ,, ,, | 5 12 6 | ,, | ,, |

### TILES.

| | s. d. | | |
|---|---|---|---|
| Best plain red roofing tiles | 41 6 | per 1,000 | at rly. depôt. |
| Hip and valley tiles | 3 7 | per doz. | ,, ,, |
| Best Broseley tiles | 48 6 | per 1,000 | ,, ,, |
| Hip and valley tiles | 4 0 | per doz. | ,, ,, |
| Best Ruabon Red, brown or brindled Do. (Edwards) | 57 6 | per 1,000 | ,, ,, |
| Do. ornamental Do. | 60 0 | ,, | ,, ,, |
| Hip tiles | 4 0 | per doz. | ,, ,, |
| Valley tiles | 3 9 | ,, | ,, ,, |
| Best Red or Mottled Staffordshire Do. (Peakes) | 50 9 | per 1,000 | ,, ,, |
| Hip tiles | 4 1 | per doz. | ,, ,, |
| Valley tiles | 3 8 | ,, | ,, ,, |

### WOOD.

BUILDING WOOD.—YELLOW.

| | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in. | 14 10 0 | 16 10 9 |
| Deals: best 3 by 9 | 13 10 0 | 14 10 0 |
| Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in. | 11 0 0 | 12 0 0 |
| Battens: best 2½ by 6 and 3 by 6 | 0 10 0 | less than 7 in. and 8 in. |
| Deals seconds | 1 0 0 | less than best |
| Battens: seconds | 0 10 0 | ,, ,, ,, |
| 2 in. by 4 in. and 2 in. by 6 in. | 9 0 0 | 10 10 0 |
| 2 in. by 4½ in. and 2 in. by 5 in. | 9 0 0 | 10 0 0 |
| Foreign Sawn Boards— | | |
| 1 in. by 1½ in. by 1½ in. | 0 10 0 | more than battens. |
| ¾ in. | 1 0 0 | more than battens. |
| Fir timber: Best middling Danzig or Memel (average specification) | At per load of 50 ft. 4 10 0 | 5 0 0 |
| Seconds | 4 5 0 | 4 10 0 |
| Small timber (8 in. to 10 in.) | 3 12 6 | 3 15 0 |
| Swedish balks | 2 15 0 | 3 0 0 |
| Pitch pine timber (35 ft. average) | 3 0 0 | 3 10 0 |

[*See also next page.*

# CONTRACTS AND PUBLIC APPOINTMENTS.

*(For some Contracts, &c., still open, but not included in this List, see previous issues.)*

## CONTRACTS.

| Nature of Work or Materials. | By whom Required. | Forms of Tender, &c., Supplied by | Tenders to be delivered |
|---|---|---|---|
| Destructor Buildings, &c., Throstle-street | Blackburn Corporation | W. Stubbs, Civil Engineer, Municipal Buildings, Blackburn | Aug. 26 |
| Street Works | Walker (Northumberland) U.D.C. | T. W. Laycock, Surveyor, Church-street, Walker | Aug. 27 |
| Tar Pavement, Seaton Carew | West Hartlepool Corporation | J. W. Brown, Borough Engineer, Hartlepool | do. |
| Street Works, &c. | Withington (Lancs) U.D.C. | A. H. Mountain, Civil Engineer, Town Hall, Withington | do. |
| Additions to Workhouse | Belfast Union Guardians | Young & Mackenzie, Architects, Belfast | do. |
| Iron Buildings | Manchester Corporation | T. E. Hughes, Town Hall, Manchester | do. |
| Chapel, Royston, near Barnsley | Felling (Durham) U.D.C. | J. Oldroyd, Architect, Royston | do. |
| Public Offices, &c. | Aberdeen Town Council | H. Miller, Civil Engineer, Felling | do. |
| Electricity Works, Dee Village | Mr. J. E. Curtis | A. Smith, Engineer, Cotton-street, Aberdeen | do. |
| *New Sluice | Chorley (Lancs) R.D.C. | J. Vevers, 31, Effra-road, Brixton | Aug. 28 |
| Cast-iron Pipes (469 tons) | Reedness U.D. School Board | A. Jolly, Surveyor, 9, High-street, Chorley | do. |
| Additions to Schools, Swinefleet, near Goole | Bedlington Coal Company | F. Chambers, Architect, Goole | do. |
| House, &c. | Messrs. Tennant & Nevin | J. G. Weeks, Bedlington, Northumberland | do. |
| Alterations, &c., to Offices, Dewsbury | Oddfellows' Society | F. W. Ridgway, Architect, Borough Chambers, Dewsbury | do. |
| Shed, Bankfield Mills, Mirfield, Yorks | Peterborough Town Council | J. Kirk & Sons, Architects, Huddersfield | Aug. 29 |
| Additions to Hall, Egremont | Ramsgate Corporation | J. Cowan, Surveyor, Egremont, Cheshire | do. |
| Granite | Reading Corporation | J W. Walshaw, Surveyor, Guildhall, Peterborough | do. |
| Cottage | Basingstoke Town Council | T. G. Taylor, Borough Surveyor, Albion House, Ramsgate | do. |
| Swimming Bath, &c. | Huddersfield Corporation | J. Bowen, Civil Engineer, Town Hall, Reading | do. |
| Widening Streets, Brook-street, &c. | Glasgow Corporation | G. Fitton, Borough Surveyor, Basingstoke | do. |
| Seven Lattice-roof Girders | Consett Iron Company, Ltd. | Town Clerk, Town Hall, Huddersfield | Aug. 30 |
| Tramway Works | Mr. S. Fox | J. Young, 83, Renfield-street, Glasgow | do. |
| Twelve Houses, Lambton-street, Langley Park | Burnley R.D.C. | C. R Oliver, Architect, Consett, Durham | do. |
| Two Blocks of Shops, Rodley, Leeds | ..... | T. Winn & Sons, Architects, 92, Albion-street, Leeds | do. |
| Reservoir, Read | ..... | S. Edmondson, Civil Engineer, 18, Nicholas-street, Burnley | Aug. 31 |
| Lecture Hall, Ballygilbert, Ireland | ..... | Rev. W. Dickson, Helen's Bay, Ballygilbert | do. |
| Street Works, Willow Hall-street, Halifax | Bromley (Kent) R.D.C. | G. Buckley & Son, Architects, Tower Chambers, Halifax | do. |
| Residence, Glencrow, Moville, Ireland | ..... | M. A. Robinson, Civil Engineer, Richmond-street, Londonderry | do. |
| Road Materials | ..... | E. Hazlehurst, 98, High-street, Bromley | do. |
| Police Station, Whitley | ..... | J. Cresswell, Architect, Moot Hall, Newcastle | do. |
| Rectory, Belmullet, Ireland | Mr. A. Pashley | J. S. Cairns, Dillon-terrace, Ballina | do. |
| House, Great Thurlow, Suffolk | Mr. A. Gibbon | A. J. Simpson, Civil Engineer, Haverhill, Suffolk | do. |
| Six Houses, Wombwell, Yorks | Mr. T. Hargate | J. Robinson, Architect, Wombwell, near Barnsley | do. |
| Three Houses, Wombwell | Greenfield Building Club | do. | do. |
| Three Houses, Hough-lane, Wombwell | Dunmow Union | do. | do. |
| Fifteen Houses, Cwmpark-road, near Treorchy | The Tankerton Estate, Limited | Secretary, Park Hotel, Cwmpark, Rhondda Valley | do. |
| *New Bathrooms and Iron Staircase | Leith Town Council | Richard Creed, Architect, 11, Finsbury-circus, E.C. | Sept. 2 |
| *Road Materials and Portland Cement | Caledonian Railway Company | A. A. Kemp, Surveyor, Whitstable | do. |
| Bridge, Anderson-place | Dunfermline Committee | Burgh Surveyor, Town Hall, Leith | do. |
| Station Buildings, Doune | Kirkmichael School Board | J. Blackburn, 302, Buchanan-street, Glasgow | do. |
| Sewers, Kincardine-on-Forth, N.B. | Halifax Corporation | W. A. B. Laing, Civil Engineer, 13, George-street, Edinburgh | do. |
| Additions, &c., to House and School, Ballintuim | Nuneaton U.D.C. | J. M'Kenzie, School Board Offices, Kirkmichael, N.B. | do. |
| Water Tower, Royle's Head | ..... | J. A. Paskin, Civil Engineer, 22, George-street, Halifax | do. |
| River Wall, &c., Mill Walk | Messrs. Hewitt & Hibell | J. S. Pickering, Civil Engineer, Council Offices, Nuneaton | do. |
| Twelve Houses, Cliviger, near Burnley | Darlington Corporation | T. H. Mitchell, Architect, Todmorden | do. |
| Residences, Stabling, &c., Queen's-road, Coventry | Guildford Guardians | Harrison & Hattrell, Architects, 28, Hertford-street, Coventry | do. |
| Stone Wall, &c. | Trustees | Borough Surveyor, Town Hall, Darlington | do. |
| Covered Way at Workhouse | The Governors | Peak & Lunn, Architects, 36, High-street, Guildford | do. |
| Mission Hall, Ilkley | Carshalton U.D.C. | Adkin & Hill, Architects, Prudential Buildings, Bradford | do. |
| *Extension of Grammar School, Bridlington | Office of Works | Botterill, Son & Bilson, Architects, Hull | Sept. 3 |
| Granite | Tonbridge R.D.C. | W. W. Gale, Civil Engineer, High-street, Carshalton | do. |
| Coastguard Station, Knightstown, Ireland | Uckfield U.D.C. | Secretary, Office of Public Works, Dublin | do. |
| *Drainage Works, Pembury | Middleton (Lancs) Corporation | W. V. Graham, Engineer, 5, Queen Anne's Gate, S.W. | do. |
| *Concrete Paving, &c. | Macduff Town Council | Offices of Council, Public Hall Chambers, Uckfield | do. |
| Paving, &c., Amy-street | Mansfield Corporation | W. Welburn, Borough Surveyor, Town Hall, Middleton | Sept. 4 |
| Harbour Works | Edinburgh Corporation | J. Barron, Civil Engineer, 1, Bon Accord-street, Aberdeen | Sept. 5 |
| Refuse Destructors | Metropolitan Asylums Board | R. Hammond, Civil Engineer, 64, Victoria-street, S.W. | do. |
| Washhouses, &c., Stockbridge | Nottingham Union Guardians | R. Morham, Architect, City Chambers, Edinburgh | Sept. 7 |
| *Repairs, &c., to 70-74, Pentonville-road, N. | Hertfordshire County Council | Offices of the Board, Embankment, E.C. | do. |
| Road Works, Bagthorpe | Wimbledon U.D.C. | A. Marshall, Architect, King-street, Nottingham | Sept. 9 |
| *Lavatory Buildings | Brighton Town Council | County Surveyor, 41, Parliament-street, S.W. | do. |
| *Flooring over Bath Pond of Swimming Bath | Lewisham Council | R. J. Thomson, Architect, 47, Hill-road, Wimbledon | Sept. 10 |
| *Artisans' Dwellings | do. | Borough Engineer, Town Hall, Brighton | Sept. 12 |
| *Erection of Shed | do. | Surveyor, Town Hall, Catford | do. |
| *Erection of Cottage | Swansea Harbour Trust | do. | do. |
| *Construction of Sewer | Linlithgow Standing Jt. Commte. | do. | do. |
| *New Harbour Offices | Governors | Harbour Offices, Swansea | Sept. 18 |
| Additions to Police Station, South Queensferry | ..... | J. G. B. Henderson, Linlithgow | No date |
| Addition to School, near Abergavenny | ..... | B. J. Francis, Architect, Abergavenny | do. |
| Block of Flats, Sydenham | Mr. E. Hetherington | P. C. Davies, Architect, Rosendale-road, Herne Hill | do. |
| Restoration of Church, West Dereham | | H. Green, Architect, Norwich | do. |
| Alterations to Romney House, Kendal | | J. Hutton, Architect, Kendal | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Application to be in |
|---|---|---|---|
| *Architectural Assistant | Hull Corporation | 175*l.* per annum | Sept. 2 |
| *Assistant in Borough Engineer's Office | Barrow-in-Furness Corporation | 144*l.* per annum | Sept. 7 |
| *Sanitary Inspector | Metro. Borough of Bermondsey | 130*l.* per annum | Sept. 9 |
| *Clerk of Works | Cannock Union | Not stated | Sept. 10 |
| *Assistant Examiner in Patent Office | Civil Service Commission | Not stated | Sept. 19 |

*Those marked with an asterisk (*) are advertised in this Number.* *Competitions, p. —. Contracts, pp. iv. vi. viii. x. & xix. Public Appointments, pp. xvii. & xix.*

## PRICES CURRENT (*Continued*).

### WOOD.

| JOINERS' WOOD. | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| White Sea: First yellow deals, 3 in. by 11 in. | 25 0 0 | 26 0 0 |
| 3 in. by 9 in. | 22 0 0 | 23 0 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 18 0 0 | 20 0 0 |
| Second yellow deals, 3 in. by 11 in. | 20 0 0 | 21 0 0 |
| ,, ,, 3 in. by 9 in. | 18 0 0 | 19 0 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 14 0 0 | 15 0 0 |
| Third yellow deals, 3 in. by 11 in. and 9 in. | 14 10 0 | 15 10 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 12 0 0 | 12 10 0 |
| Petersburg: first yellow deals, 3 in. by 11 in. | 22 0 0 | 23 0 0 |

### WOOD.

| JOINERS' WOOD. | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| Petersburg: first yellow deals, 3 in. by 9 in. | 19 0 0 | 20 0 0 |
| Battens | 14 0 0 | 15 0 0 |
| Second yellow deals, 3 in. by 11 in. | 15 10 0 | 16 10 0 |
| Do. 3 in. by 9 in. | 14 0 0 | 15 0 0 |
| Battens | 11 10 0 | 12 0 0 |
| Third yellow deals, 3 in. by 11 in. | 13 10 0 | 14 10 0 |
| Do. 3 in. by 9 in. | 13 0 0 | 13 10 0 |
| Battens | 10 10 0 | 11 10 0 |
| White Sea and Petersburg:— | | |
| First white deals, 3 in. by 11 in. | 15 0 0 | 16 0 0 |

### WOOD.

| JOINERS' WOOD. | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| White Sea and Petersburg:— | | |
| First white deals, 3 in. by 9 in. | 14 0 0 | 15 0 0 |
| Battens | 12 0 0 | 13 0 0 |
| Second white deals 3 in. by 11 in. | 14 0 0 | 15 0 0 |
| ,, ,, 3 in. by 9 in. | 13 0 0 | 14 0 0 |
| ,, battens | 10 10 0 | 11 10 0 |
| Pitch pine: deals | 16 0 0 | 18 0 0 |
| Under 2 in. thick extra | 0 10 0 | 1 0 0 |
| Yellow Pine— | | |
| First, regular sizes | 30 0 0 | 33 0 0 |
| Broads (12 in. and up) | 2 0 0 | more. |
| Oddments | 22 0 0 | 24 0 0 |
| Seconds, regular sizes | 24 10 0 | 26 10 0 |

## PRICES CURRENT (*Continued*).

### WOOD.

| | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| Yellow Pine Oddments | 20 0 0 | 22 0 0 |
| Kauri Pine— | | |
| Planks, per ft. cube | 0 3 6 | 0 4 6 |
| Dantzig and Stettin Oak Logs— | | |
| Large, per ft. cube | 0 2 6 | 0 3 0 |
| Small ,, ,, | 0 2 3 | 0 2 6 |
| Wainscot Oak Logs, per ft. cube | 0 5 0 | 0 5 6 |
| Dry Wainscot Oak, per ft. sup. as inch | 0 0 8 | 0 0 7 |
| in. do. do. | 0 0 7 | - - - |
| Dry Mahogany— | | |
| Honduras, Tabasco, per ft. sup. as inch | 0 0 9 | 0 0 11 |
| Selected, Figury, per ft. sup. as inch | 0 1 6 | 0 2 0 |
| Dry Walnut, American, per ft. sup. as inch | 0 0 10 | 0 1 0 |
| Teak, per load | 16 0 0 | 20 0 0 |
| American Whitewood Planks— | | |
| Per ft. cube | 0 3 0 | 0 3 6 |
| Prepared Flooring— | Per square | |
| 1 in. by 6 in. and 7 in. yellow, planed and shot | 0 13 0 | 0 16 6 |
| 1 in. by 6 in. and 7 in. yellow, planed and matched | 0 13 6 | 0 17 6 |
| 1¼ in. by 6 in. and 7 in. yellow, planed and matched | 0 16 0 | 1 1 0 |
| 1 in. by 6 in. and 7 in. white, planed and shot | 0 11 0 | 0 13 0 |
| 1 in. by 6 in. and 7 in. white, planed and matched | 0 11 6 | 0 13 6 |
| 1¼ in. by 6 in. and 7 in. white, planed and matched | 0 14 0 | 0 16 6 |

### JOISTS, GIRDERS, &c.

| | In London, or delivered to Railway Vans, per ton. £ s. d. | £ s. d. |
|---|---|---|
| Rolled Steel Joists, ordinary sections | 6 15 0 | 7 15 0 |
| Compound Girders ,, ,, | 8 15 0 | 10 0 0 |
| Angles, Tees and Channels, ordinary sections | 8 12 6 | 10 12 6 |
| Flitch Plates | 8 15 0 | 9 10 0 |
| Cast Iron Columns and Stanchions, including ordinary patterns | 7 5 0 | 9 0 0 |

### METALS.

| | Per ton, in London. £ s. d. | £ s. d. |
|---|---|---|
| IRON.— | | |
| Common Bars | 8 0 0 | 8 10 0 |
| Staffordshire Crown Bars, good merchant quality | 8 10 0 | 9 0 0 |
| Staffordshire "Marked Bars" | 10 10 0 | - - - |
| Mild Steel Bars | 9 0 0 | 9 10 0 |
| Hoop Iron, basis price | 9 5 0 | 9 15 0 |
| ,, ,, galvanised | 16 0 0 | - - - |
| (* And upwards, according to size and gauge.) | | |
| Sheet Iron, Galvanised, flat, ordinary quality.— | | |
| Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g. | 12 10 0 | - - - |
| ,, ,, 22 g. and 24 g. | 13 0 0 | - - - |
| ,, ,, 26 g. | 14 0 0 | - - - |
| Sheet Iron, galvanised, flat, best quality.— | | |
| Ordinary sizes to 20 g. | 16 10 0 | - - - |
| ,, ,, 22 g. and 24 g. | 17 0 0 | - - - |
| ,, ,, 26 g. | 18 10 0 | - - - |
| Galvanised Corrugated Sheets.— | | |
| Ordinary sizes, 6 ft. to 8 ft. 20 g. | 12 10 0 | - - - |
| ,, ,, 22 g. and 24 g. | 13 0 0 | - - - |
| ,, ,, 26 g. | 14 0 0 | - - - |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker | 12 5 0 | - - - |
| ,, ,, 22 g. and 24 g. | 13 5 0 | - - - |
| ,, ,, 26 g. | 14 5 0 | - - - |
| Cut nails, 3 in. to 6 in. | 9 10 0 | 10 0 0 |
| (Under 3 in. usual trade extras.) | | |

### LEAD, &c.

| | Per ton, in London. £ s. d. | £ s. d. |
|---|---|---|
| LEAD—Sheet, English, 3 lbs. & up. | 14 17 6 | - - - |
| Pipe in coils | 15 7 6 | - - - |
| Soil Pipe | 17 17 6 | - - - |
| ZINC—Sheet— | | |
| Vieille Montagne ton | 24 10 0 | - - - |
| Silesian | 24 0 0 | - - - |
| COPPER— | | |
| Strong Sheet per lb. | 0 1 0½ | - - - |
| Thin ,, | 0 1 2 | - - - |
| Copper nails ,, | 0 1 2 | - - - |
| BRASS— | | |
| Strong Sheet ,, | 0 0 11 | - - - |
| Thin ,, ,, | 0 1 1 | - - - |
| TIN—English Ingots ,, | 0 1 4½ | - - - |
| SOLDER—Plumbers' ,, | 0 0 7 | - - - |
| Tinmen's ,, | 0 0 8 | - - - |
| Blowpipe ,, | 0 0 9 | - - - |

### PLASTER, &c.

| | s. d. | |
|---|---|---|
| Coarse Plaster | 30 0 | per ton delivered. |
| Fine ,, | 38 0 | ,, ,, |
| Coarse Keenes and Parian cement | 55 0 | ,, ,, |
| Fine do. do. | 60 0 | ,, ,, |
| Robinson's Fireproof Cement | 50 0 | ,, ,, |
| Do. Fine white ,, | 55 0 | ,, ,, |
| (Exclusive of the ordinary charge for sacks. | | |
| Whiting | 27 0 to 30 0 | ,, |

## PRICES CURRENT (*Continued*).

### ENGLISH SHEET GLASS IN CRATES.

| | |
|---|---|
| 15 oz. thirds | 3d. per ft. delivered. |
| ,, ,, fourths | 2¾d. ,, ,, |
| 21 oz. thirds | 3¾d. ,, ,, |
| ,, ,, fourths | 3½d. ,, ,, |
| 26 oz. thirds | 5d. ,, ,, |
| ,, ,, fourths | 4½d. ,, ,, |
| 32 oz. thirds | 6d. ,, ,, |
| ,, ,, fourths | 5½d. ,, ,, |
| Fluted sheet, 15 oz. | 3½d. ,, ,, |
| ,, ,, 21 ,, | 4½d. ,, ,, |
| ¼ Hartley's Rolled Plate | 3d. ,, ,, |
| ⅜ ,, ,, ,, | 3½d. ,, ,, |
| ½ ,, ,, ,, | 4d. ,, ,, |

### OILS, &c.

| | £ s. d. |
|---|---|
| Raw Linseed Oil in pipes per gallon | 0 2 10 |
| ,, ,, ,, in barrels ,, | 0 2 11 |
| ,, ,, ,, in drums ,, | 0 3 1 |
| Boiled ,, ,, in pipes ,, | 0 3 0 |
| ,, ,, ,, in barrels ,, | 0 3 1 |
| ,, ,, ,, in drums ,, | 0 3 3 |
| Turpentine, in barrels ,, | 0 2 3 |
| ,, in drums ,, | 0 2 5 |
| Genuine Ground English White Lead per ton | 22 0 0 |
| Red Lead, Dry ,, | 22 10 0 |
| Best Linseed Oil Putty per cwt. | 0 9 0 |
| Stockholm Tar per barrel | 1 10 0 |

### VARNISHES, &c.

| | per gallon £ s. d |
|---|---|
| Fine Elastic Copal Varnish for outside work | 0 16 6 |
| Best Elastic Copal Varnish for outside work | 1 0 0 |
| Best Elastic Carriage Varnish for outside work | 0 16 6 |
| Best Hard Oak Varnish for inside work | 0 10 6 |
| Best Extra Hard Church Oak Varnish for inside work | 0 10 6 |
| Fine Hard Copal Varnish for inside work | 0 16 0 |
| Best Hard Copal Varnish for inside work | 1 0 0 |
| Best Hard Carriage Varnish for inside work | 0 16 0 |
| Extra Pale Paper Varnish | 0 12 0 |
| Best Japan Gold Size | 0 10 0 |
| Best Black Japan | 0 16 0 |
| Oak and Mahogany Stain | 0 9 0 |
| Brunswick Black | 0 9 0 |
| Berlin Black | 0 15 0 |
| Knotting | 0 10 0 |
| Best French and Brush Polish | 0 10 0 |

## TO CORRESPONDENTS.

J. B.—R. & W. D. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

*We cannot undertake to return rejected communications.*

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BIGGLESWADE.—For the erection of showrooms, for Messrs. Maythorn & Son. Mr. E. Twelvetrees, architect, Sandy. Quantities by Mr. Gilbert W. Booth, F.S.I., Adelphi-street, W.C.:—

| | | | |
|---|---|---|---|
| L. Rootham | £1,809 | W. Wade | £1,629 |
| H. Martin | 1,750 | Stones & Skelton | 1,580 |
| Rainsford Bros. | 1,746 | French & Co. | 1,545 |
| J. Hinkin | 1,685 | J. Potter, Bedford* | 1,526 |

BOURNE END.—For the erection of two houses with shops, and a lock-up shop, for Mr. Jesse Andrew. Mr. Alexander H. B. Ellis, surveyor, 89, Constantine-road, Hampstead, N.W. Quantities by the surveyor:—

| | | | |
|---|---|---|---|
| C. Simmons | £1,520 10 0 | Carter & Son | £1,399 0 0 |
| A. Grimsley | 1,450 0 0 | Henry Flint | 1,347 0 0 |
| G. Brown | 1,412 4 3 | Harry Harris* | 1,325 0 0 |

[Surveyor's estimate, £1,200.]

CANNOCK.—For the erection of infirmary buildings for forty-eight patients, for the Union Guardians. Mr. Ashton Veall, architect, 84, Darlington-street, Wolverhampton. Quantities by architect:—

| | | | |
|---|---|---|---|
| Willcock & Co. | £5,534 15 0 | J. Reynolds | £4,896 0 0 |
| F. L. Jones | 5,365 0 0 | E. Whittingham | 4,845 0 0 |
| S. Wootton | 5,314 13 0 | Guest & Sons | 4,744 0 0 |
| M. B. Anderson | 5,166 0 0 | W. H. Gibbs | 4,685 0 0 |
| F. Sprenger | 5,119 0 0 | H. Gough | 4,640 0 0 |
| W. Hopkins | 4,995 0 0 | Thos. Mason, Hednesford* | ‡4,595 0 0 |
| A. Williams | 4,961 12 10 | | |
| Espley & Sons | 4,940 0 0 | | |

‡ Additional cost if wood block floors, £89 16s.

CARDIFF.—For additions to jeweller's shop, business premises, &c., St. Mary-street, for Messrs. Heitzman & Sons. Messrs. Veall & Sant, architects. Quantities by the architects:—

| | | | |
|---|---|---|---|
| Turner & Sons | £974 0 0 | W. T. Morgan | £800 0 0 |
| Thomas & Co. | 900 5 6 | Couzens & Co. | 798 15 0 |
| Shepton & Son | 892 3 0 | Melhuish Bros. | 795 18 0 |
| Lattey & Co. | 865 0 0 | M. O. Williams | 750 13 9 |
| G. Hallett | 858 10 0 | F. Small* | 685 0 0 |

[All of Cardiff.]

CUPAR-FIFE.—For renovations, &c., to Logie manse and offices. Mr. Henry Bruce, architect, County Buildings, Cupar-Fife:—

*Masonry.*

| | | | |
|---|---|---|---|
| C. Henderson | £77 13 11 | Carmichael & Robertson, Logie and Dairsie* | £73 8 0 |
| D. Ritchie | 63 12 3 | | |

*Joinery.*

| | | | |
|---|---|---|---|
| W. Buist | £44 18 4 | W. Boyd | £33 11 8½ |
| C. Henderson, Balunello* | 35 14 6 | W. Scott | 33 0 0 |
| J. Jack | 35 4 8 | A. W. Haggart | 31 10 8 |
| | | A. Robertson | 30 0 0 |

*Plumbing.*

| | | | |
|---|---|---|---|
| D. Donaldson | £56 9 8½ | R. Bell | £47 3 7 |
| Betsworth & Barlow, Newport, Fife* | 47 13 7 | A. Stewart | 45 0 0 |

*Plastering.*

| | | | |
|---|---|---|---|
| F. Batchelor | £17 5 0 | Robb & McIntosh | £11 18 1 |
| Jackson & Adamson | 12 15 2 | R. Arthur, Dundee and Cupar* | 10 3 2 |

*Slating.*

| | | | |
|---|---|---|---|
| F. Batchelor | £38 15 0 | J. Stirrier, Newport, Fife* | £28 0 0 |
| Jackson & Adamson | 30 17 4 | R. Arthur | 27 9 7 |
| C. Brand | 29 5 0 | Robb & McIntosh | 27 4 2 |
| T. Black | 28 6 8 | | |

*Painting.*

| | | | |
|---|---|---|---|
| W. Fenton, Newport, Fife* | £50 15 6 | J. W. Carr | £46 14 5½ |
| | | D. Reid | 30 10 0 |

EAST CLANDON.—For additions to schools, for the Managers. Mr. Byron Noel, surveyor, Ockham, Woking:—

| | | | |
|---|---|---|---|
| W. G. Edwards | £529 | J. Pullen, Ripley* | £383 |

FLAMBOROUGH.—For the erection of a house and stabling, for Mr. John Hall. Mr. Joseph Shepherdson, architect, 15, Manor-street, Bridlington:—

| | | | |
|---|---|---|---|
| Barr & Booth | £703 0 0 | John Lawden, Bridlington* | £630 0 0 |
| Yeomans | 698 19 0 | Thos. Nordass (withdrawn) | 620 17 0 |
| E. Wilson | 697 4 10 | | |
| W. Barnes | 686 0 0 | | |
| Geo. Hall | 680 0 0 | | |
| Sampson & Liddall | 660 0 0 | | |

GLENGARIFF.—For additions to the "Eccles" Hotel. Mr. A. Hill, architect, 22, St. George's-street, Cork:—

| | | | |
|---|---|---|---|
| S. Hill | £5,641 | W. H. Jones, Dunmanway* | £5,092 |
| W. O'Connell | 5,580 | | |

HARROGATE.—For supplying and fixing constructional and sundry ironwork at the new Kursaal, for the Corporation. Mr. Robert J. Beale, architect. Quantities supplied:—

| | |
|---|---|
| Keay, Ltd. | £6,825 0 0 |
| Wood & Co. | 5,958 0 0 |
| Power, Power, & Co. | 5,938 0 0 |
| Dean, Ransome, & Co. | 5,176 3 10 |
| Young & Co, Ltd. | 5,165 3 1 |
| Wright & Son | 4,957 0 0 |
| Heenan & Froude | 4,904 10 0 |
| Bagshaw & Sons | 4,869 10 0 |
| Baker & Co. | 4,804 4 9 |
| Lockerbie & Wilkinson | 4,700 1 9 |
| Hodgson & Co. | 4,500 0 0 |
| O. Atkinson | 4,487 0 0 |
| Richards & Co. | 4,219 18 10 |
| Pierson & Co. | 4,075 0 0 |
| Schofield & Hancox, Manchester* | 3,741 0 0 |

HUCKNALL HUTHWAITE (Notts.).—For the erection of two blocks of schools, for the School Board. Mr. J. E. Goodacre, architect, 4, Stockwell-gate, Mansfield:—

| | | | |
|---|---|---|---|
| Houfton & Co. | £6,971 | F. Lee | £6,638 |
| J. F. Price | 6,772 | A. B. Clarke, Nottingham* | 6,210 |
| T. Barlow | 6,770 | | |

LLANELLY.—For erecting a villa at New-road, Llanelly, for Mr. R. W. Evans. Mr. T. Arnold, architect, Llanelly:—

| | | | |
|---|---|---|---|
| John Evans | £1,263 | Brown, Thomas, & John | £999 |
| G. Mercer | 1,080 | Howell & Son, Ltd.* | 997 |

LONDON.—For the pulling-down and rebuilding of premises, High-street, Marylebone. Mr. J. Randall Vining, architect and surveyor, 89, Chancery-lane, W.C.:—

| | | | |
|---|---|---|---|
| Lawrance & Sons | £7,128 | H. L. Holloway | £6,483 |
| Patman & Fotheringham, Ltd. | 6,787 | J. & C. Bowyer | 6,436 |
| Holloway Bros. | 6,693 | Black & Son | 6,122 |
| Johnson & Co., Ltd. | 6,554 | R. S. Buckeridge* | 5,995 |

[Architect's estimate £6,000.]

| *See also next page.*

BEXHILL.—For Street Works for the Urban District Council. Mr. G. Ball, Engineer, Town Hall, Bexhill :—

*Contract No. 1.*

| | Little Common-road. | Chantry-lane. | Hastings-road. | |
|---|---|---|---|---|
| | £ s. | £ s. | £ s. | £ s. |
| Stephen Carey | 746 10 | 316 10 | 1,112 15 | 2,175 15 |
| Peerless, Dennis, & Co. | 732 0 | 357 0 | 1,068 0 | 2,157 0 |
| P. Jenkins | 755 0 | 258 0 | 1,104 0 | 2,117 0 |
| Thos. Adams, Wood Green, N.* | 690 0 | 335 0 | 1,035 0 | 2,060 0 |

*Contract No. 2.*

| | De La Warr-road. | Dorset-road. | Fairmount-road. | Elmstead-road. | |
|---|---|---|---|---|---|
| | £ s. | £ s. | £ s. | £ s. | £ s. |
| Stephen Carey | 1,507 10 | 1,201 15 | 1,190 10 | 952 15 | 4,852 10 |
| Thos. Adams | 1,497 0 | 1,197 0 | 1,159 0 | 957 0 | 4,810 0 |
| P. Jenkins | 1,410 0 | 1,250 0 | 1,076 0 | 825 0 | 4,561 0 |
| Peerless, Dennis, & Co.* | 1,239 0 | 1,187 0 | 1,168 0 | 894 0 | 4,488 0 |

OXTED (Surrey).—For the erection of Shire horse stud stables at Brook Farm, for Mr. Max Michaelis. Messrs. F. S. Brereton & Son, architects and surveyors, 292, High Holborn, W.C. Quantities by Mr. E. G. Hardcastle, 61, Chancery-lane, W.C. :—

| | | | |
|---|---|---|---|
| Wm. Worssell | £4,189 | R. Dartnell | £3,419 |
| G. E. Loveland | 3,622 | J. Carmichael* | 3,393 |
| Josolyne & Young | 3,497 | | |

RUGBY.—For additions and improvements to St. Andrew's Boys' Schools. Mr. E. H. Lingen Barker, architect, Hereford :—

| | | | |
|---|---|---|---|
| Hollowell | £1,510 0 0 | Sturgess & Son | £1,314 10 0 |
| Harris | 1,535 0 0 | Bax & Dawson | 1,253 0 0 |
| Linnell & Son | 1,460 0 0 | Tate & East-wood, Market Harborough* | 1,193 19 4 |
| Foster & Dicksee | 1,444 0 0 | | |
| Hopkins & Son | 1,435 6 0 | | |

TANDRIDGE (Oxted, Surrey).—For farm buildings stables, and cottage at Court Farm, and farm buildings at Tandridge Court, for Mr. Max Michaelis. Messrs. F. S. Brereton & Son, architects and surveyors, 292, High Holborn, W.C. Quantities by Mr. E. G. Hardcastle, 61, Chancery-lane, W.C. :—

| | | | |
|---|---|---|---|
| Wm. Worssell | £5,495 | F. & H. F. Higgs | £5,210 |
| Josolyne & Young | 5,456 | James Carmichael | 4,874 |
| Wm. Akers & Co. | 5,269 | E. J. Saunders* | 4,840 |
| Wm. Smith | 5,264 | | |

TEIGNMOUTH.—For additions to the isolation hospital, for the Urban District Council. Mr. C. Jones, surveyor, Town Hall, Teignmouth :—

| | | | |
|---|---|---|---|
| Mingo & Boone | £1,435 | J. Cornelius | £1,185 |
| E. Andrews | 1,210 | F. Francis | 1,112 |

WALSALL.—For the erection of a boiler house, &c., Pleck-road, for the Town Council. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall :—

| | | | |
|---|---|---|---|
| Marshall | £4,226 | W. & J. Webb | £3,668 |
| Smith & Son | 4,050 | Guest | 3,580 |
| Sapcote & Son | 3,989 | James | 3,267 |
| Mallin | 3,926 | Tildesley | 3,228 |
| Harley & Son | 3,723 | Gibbs, King's Heath* | 3,200 |
| Wistance | 3,669 | Crisp | 3,015 |

WEMBLEY.—For the erection of shop and premises, No. 23, The Mace, Wembley, for Mr. H. Honour. Mr. Arthur W. Osborn, architect, 90, Queen-street, Cheapside, E.C. Quantities by Mr. W. James Pamphilon, 21, Finsbury-pavement, E.C. :—

| | | | |
|---|---|---|---|
| Thompson & Son | £2,593 1 | W. Goddard, jun. | £1,997 0 |
| Burman & Sons | 2,500 0 | Sutton & Styles | 1,975 0 |
| Kiddle & Son | 2,400 0 | J. Watt | 1,925 0 |
| Freeman & Barber | 2,150 0 | | |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| Driver Prize .. .. | 1895 | 1896 | — | 1898 | 1899 | 1900 | 1901 |
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| Penfold Gold Medal | — | — | — | — | 1899 | 1900 | — |
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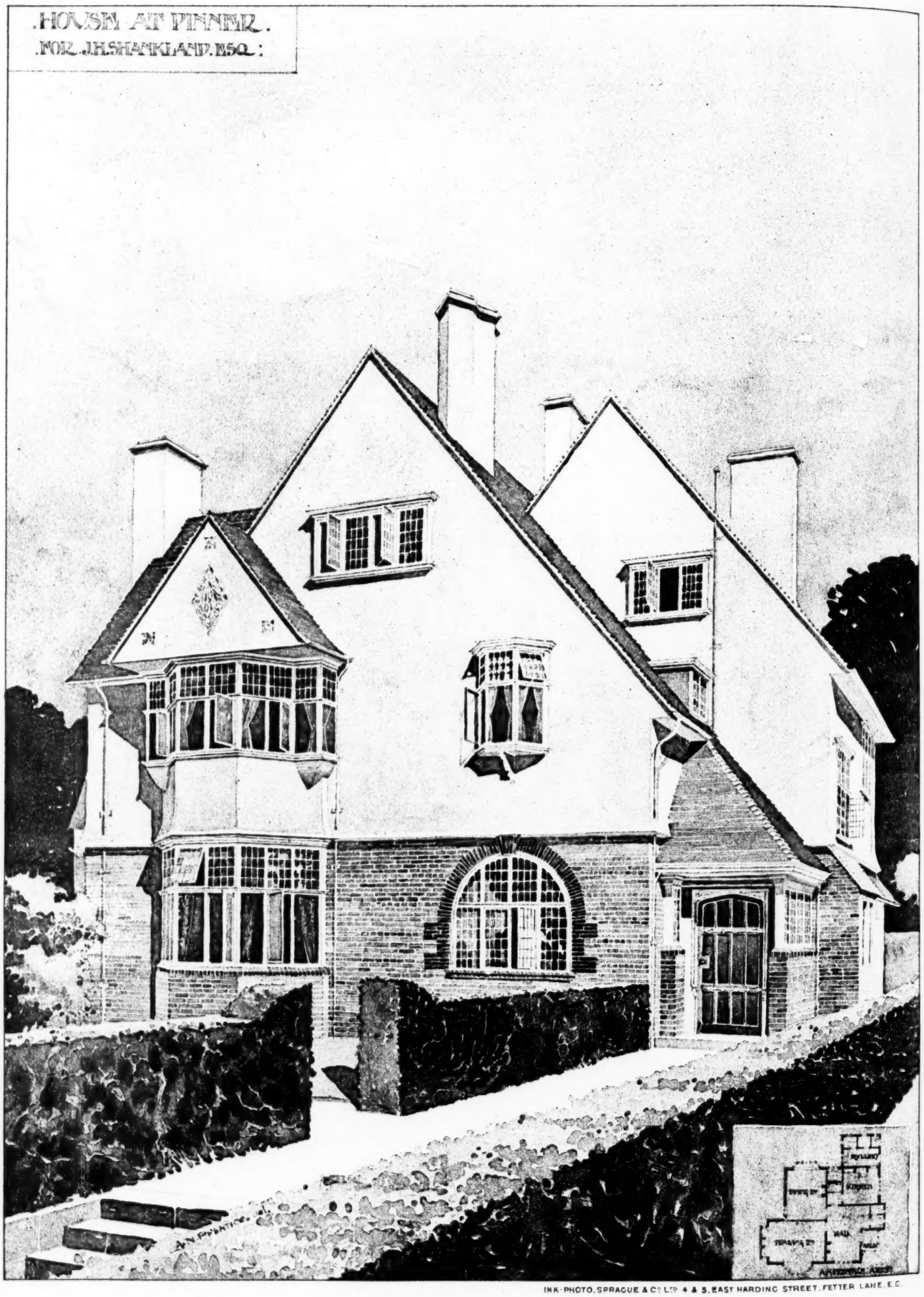

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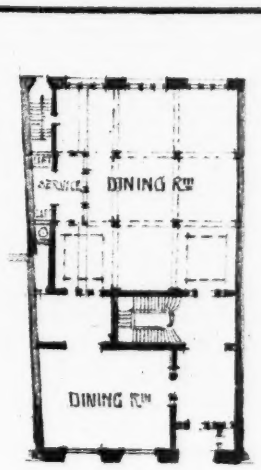


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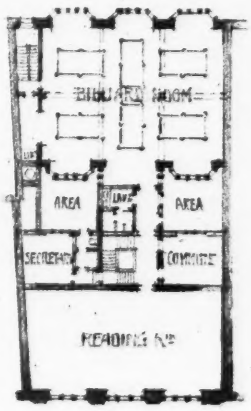


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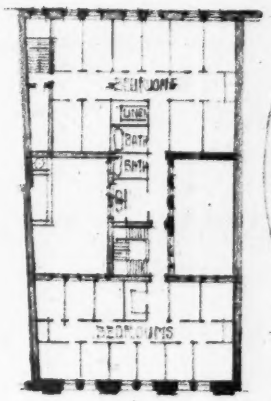


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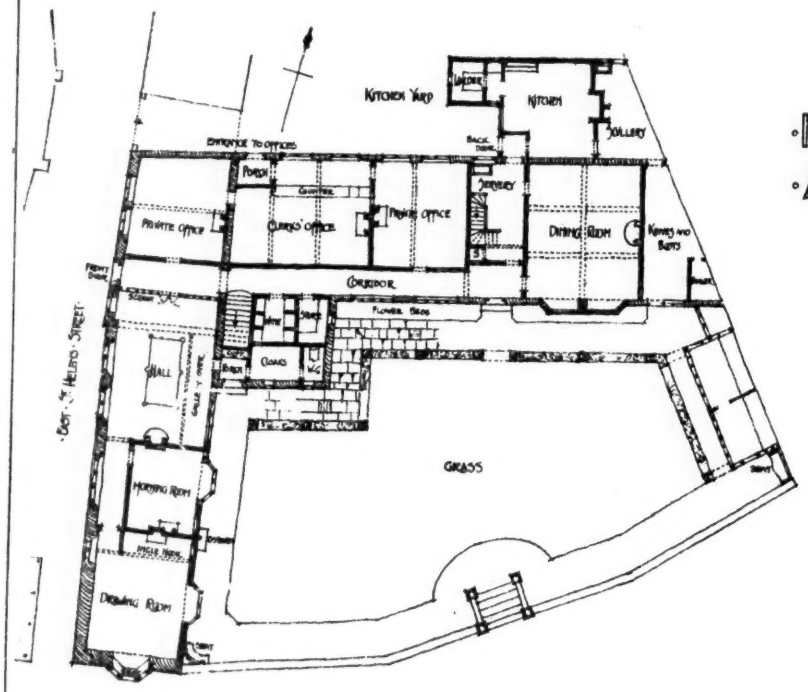


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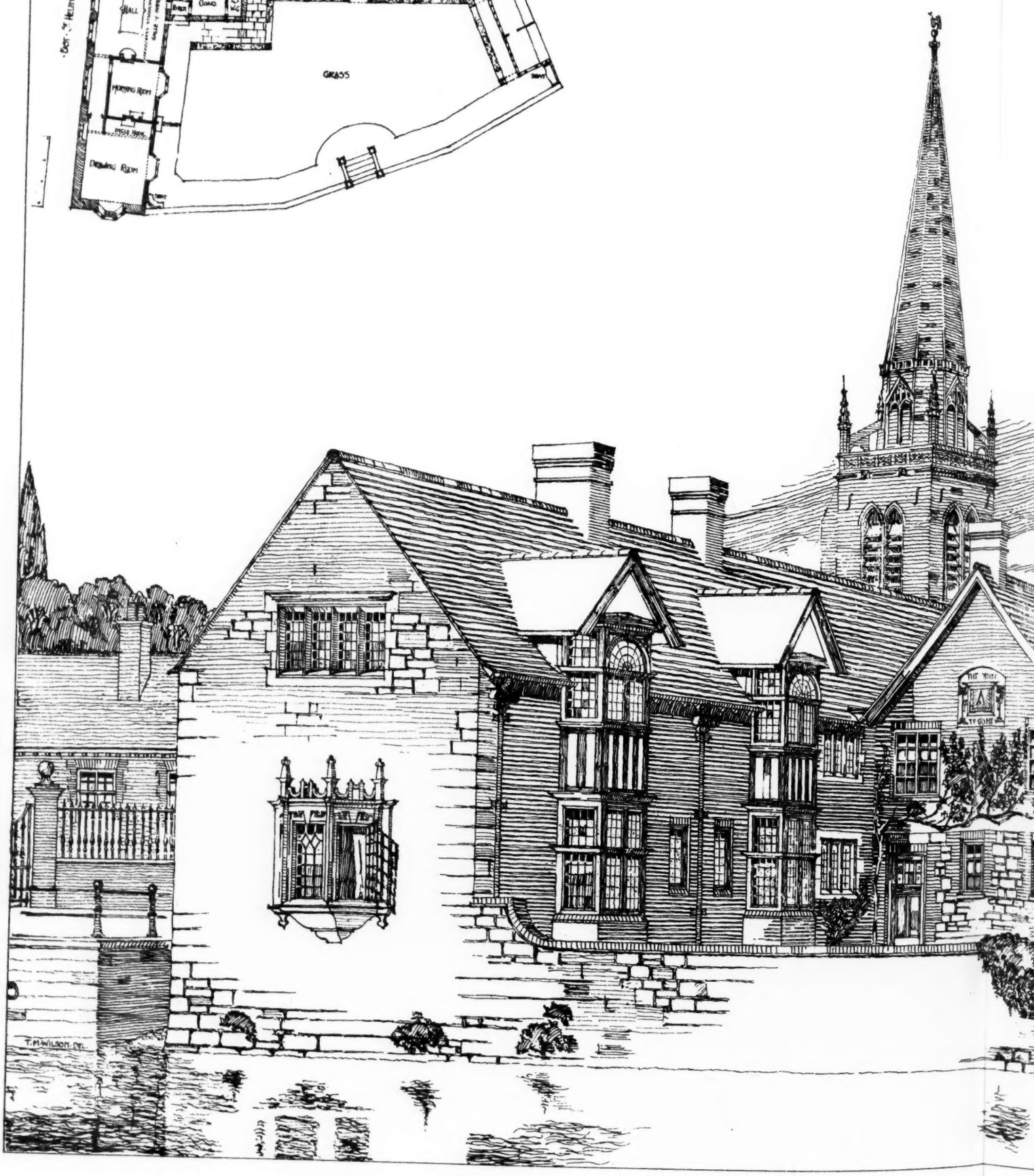

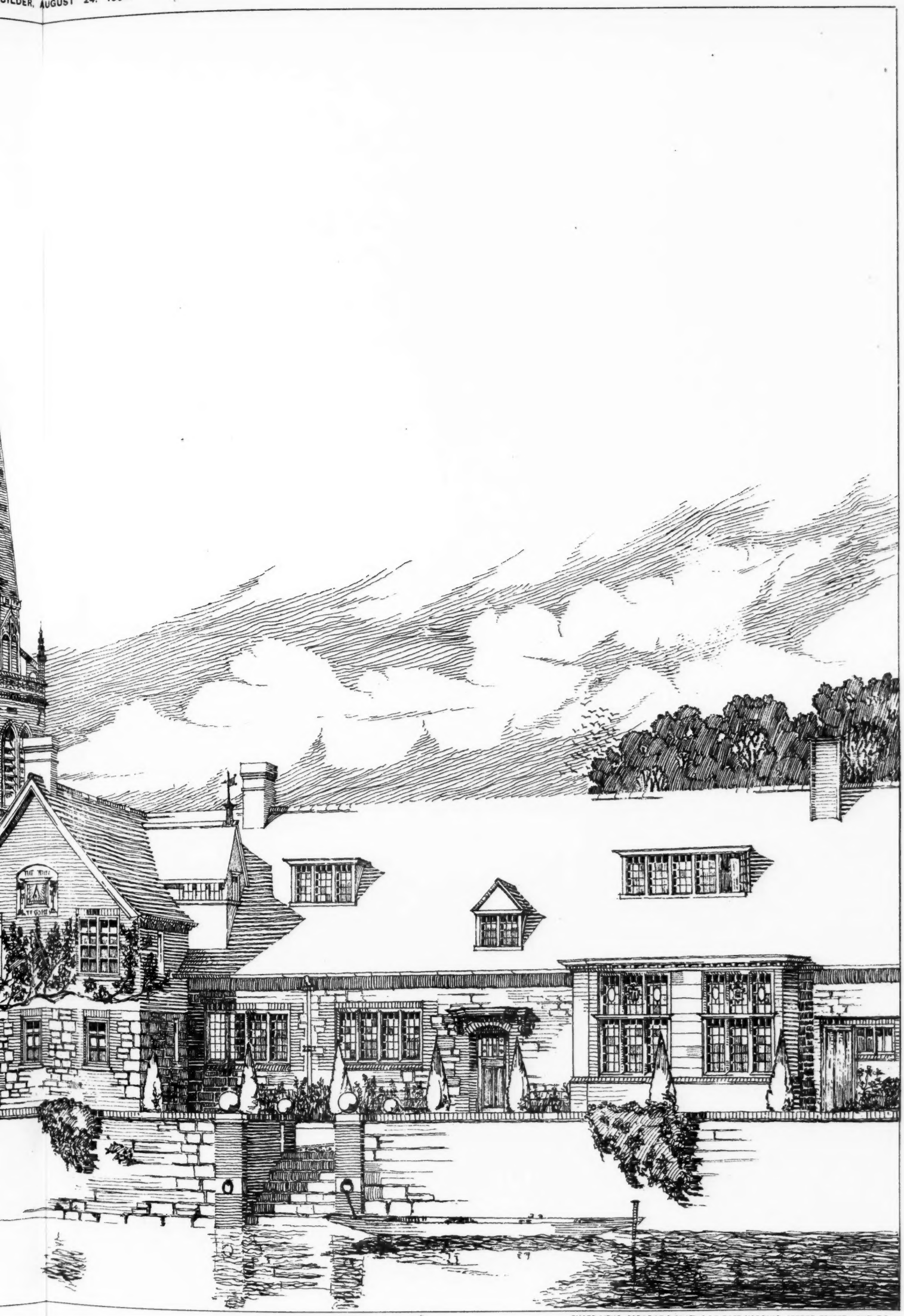

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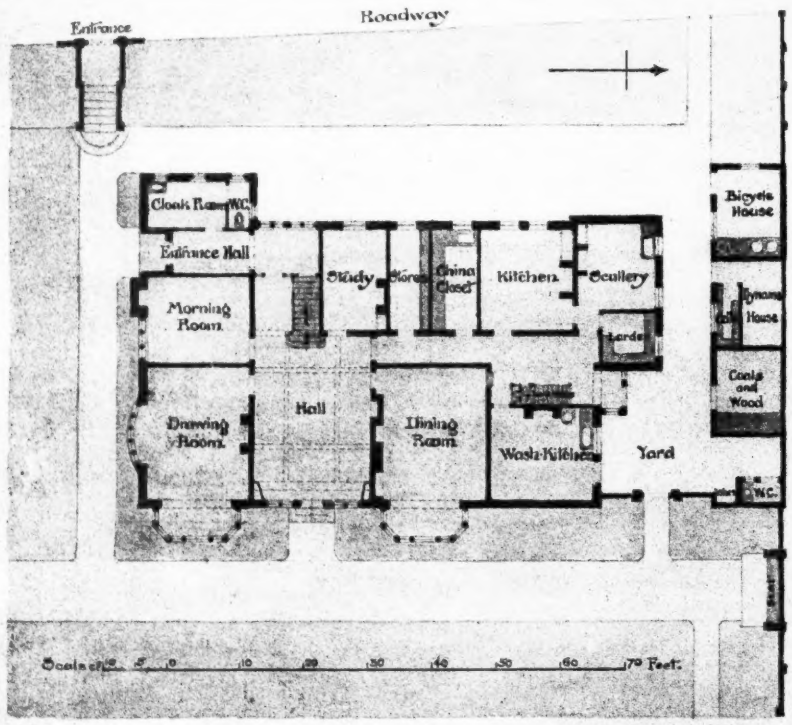
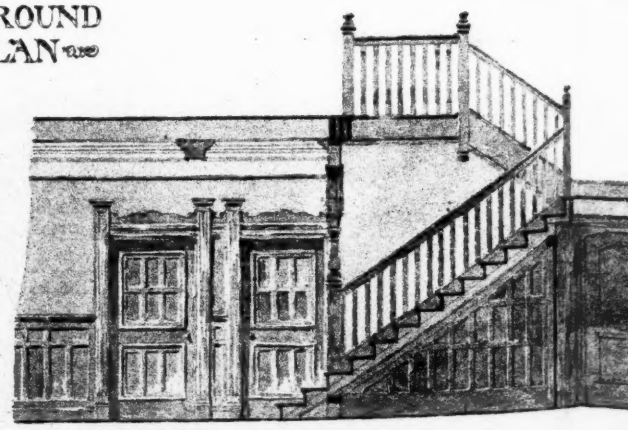



GROUND PLAN



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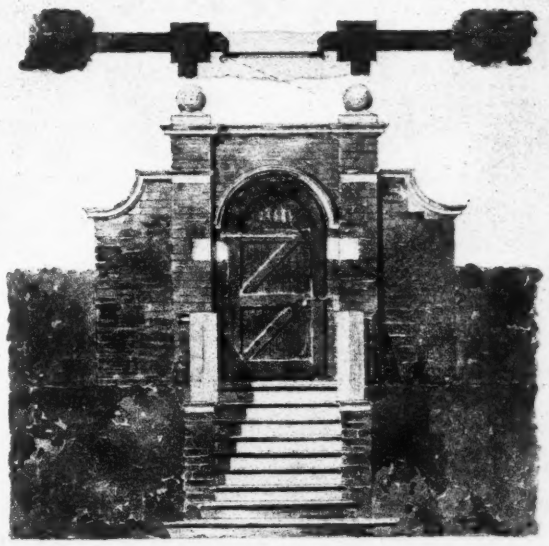
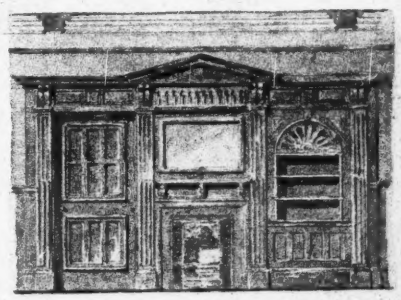
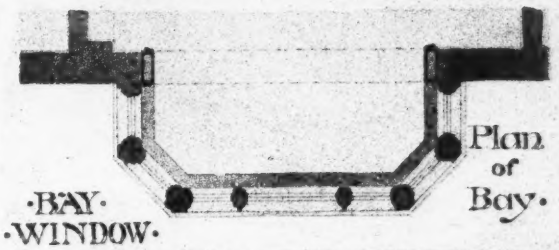


Entrance Gate



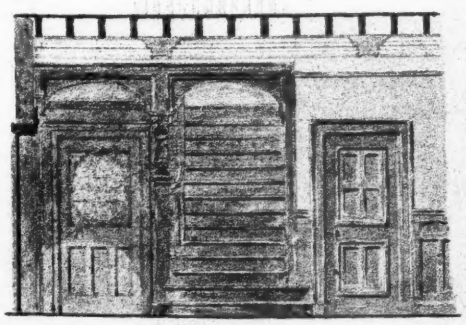
·Chimney-piece·in·Hall·

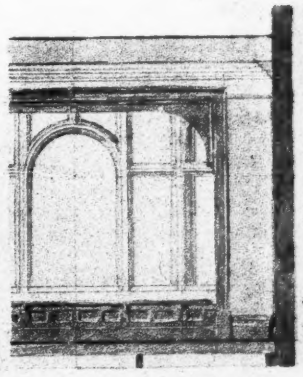


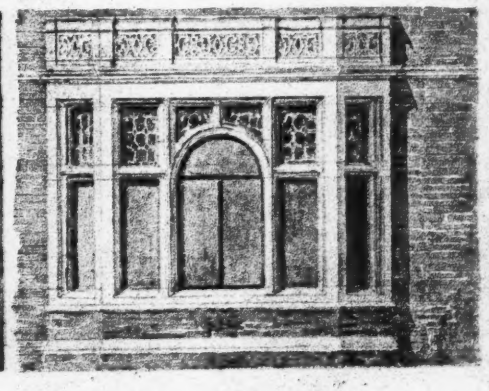
·BAY·
·WINDOW·

Plan of Bay·

·STAIRCASE·







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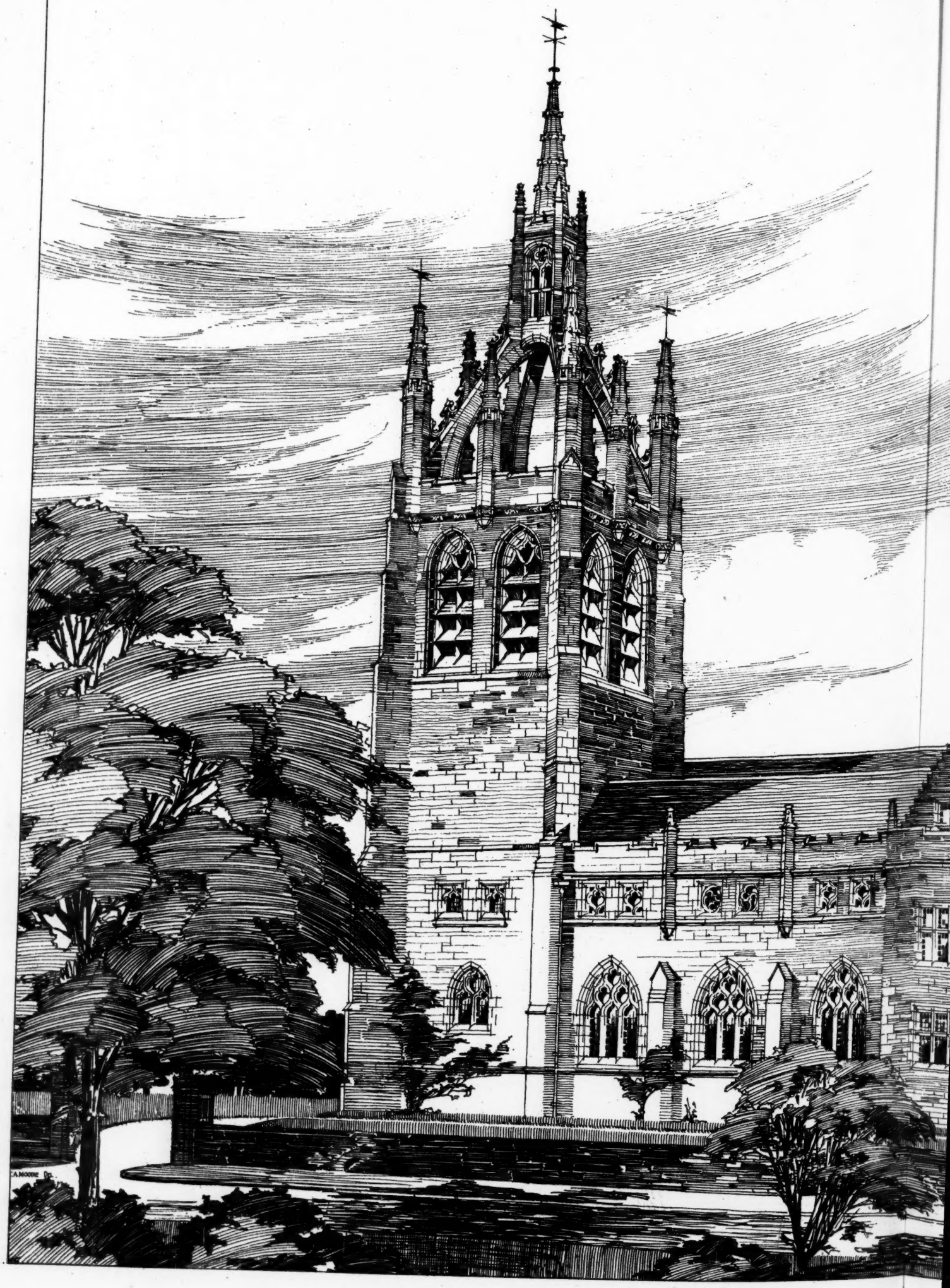

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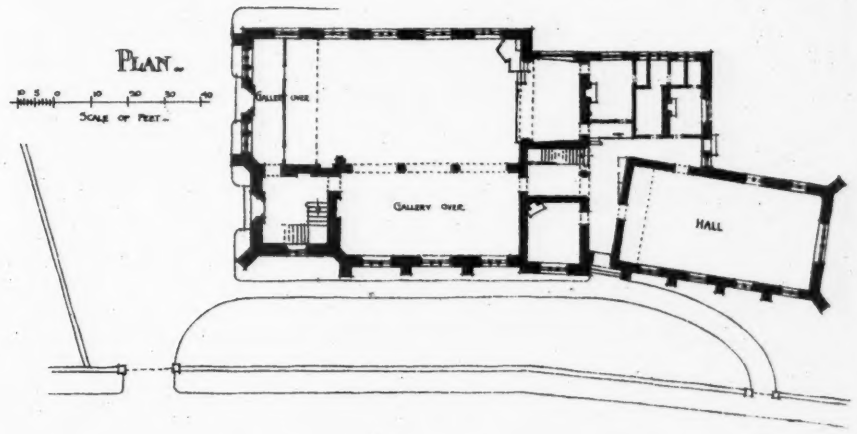

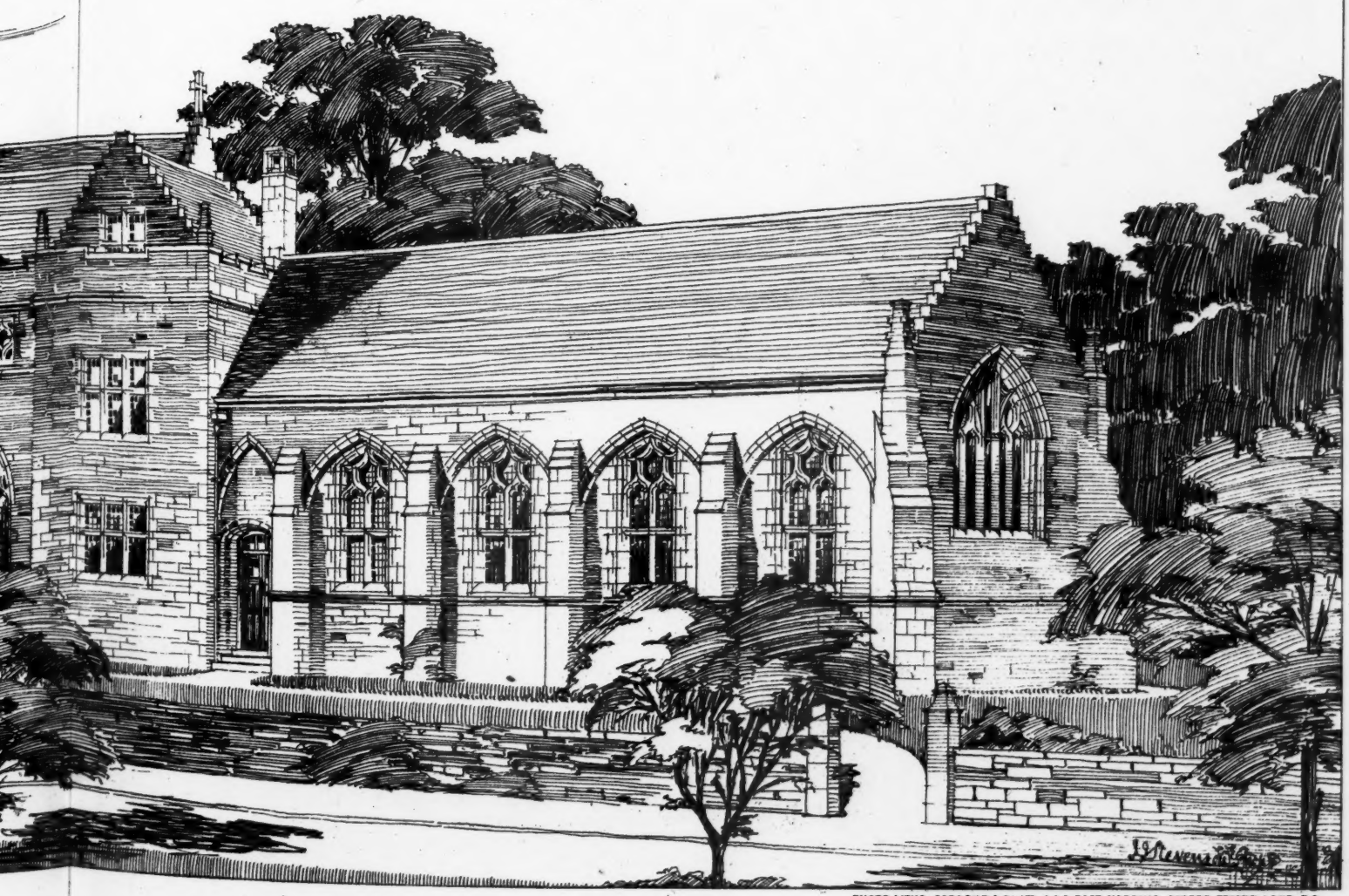

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